DOCUMENT RESUME

ED 125 872 SE 020 245

AUTHOR Hanselman, David L., Ed.; And Others
TITLE Environmental Attitudes, Ethics, Values and Their Communication. Proceedings of the National Conservation Education Association Conference (21st, State University of New York College of Environmental Science and Forestry, Syracuse, New York, August 11-14, 1974).
INSTITUTION State Univ. of New York, Syracuse. Coll. of Forestry.
PUB DATE Aug 74
NOTE 54p.

EDRS PRICE MF-$0.83 HC-$3.50 Plus Postage.
DESCRIPTORS *Attitudes; *Conference Reports; *Conservation Education; *Environmental Education; Ethics; Reports; *Social Environment; Speeches; Symposia; Values

ABSTRACT

Over 250 participants of the conference spent four days examining the implications of human interaction with social and physical environments for environmental education. These individuals came from 36 states and Ontario, sharing a common concern for environmental attitudes, ethics, values, and their communication. This publication contains conference papers that identify those concerns and indicate prescriptions for the communication of attitudes, values, and ethics appropriate to sanative environmental management. The papers, discussions, and sessions are edited and present only the major findings of the conference. A list of the participants is included at the end. (Author/MA)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED125872

ENVIRONMENTAL ATTITUDES, ETHICS, VALUES AND THEIR COMMUNICATION

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

Proceedings of the 21st National Conservation Education Association Conference

State University of New York
College of Environmental Science and Forestry
Syracuse, New York

2

SE020 245

INTRODUCTION

Between August 11 and 14, 1974, the Conservation Education Association met for its 21st Annual Meeting at the State University of New York College of Environmental Science and Forestry in Syracuse, New York. More than 250 participants spent four days examining the implications of human interaction with social and physical environments for environmental education. That these individuals came from 36 states and Ontario, Canada amplified the common concern held for environmental attitudes, ethics, values and their communication.

The papers which follow identify those concerns and indicate prescriptions for the communication of attitudes, values, and ethics appropriate to sanative environmental management.

To maintain CEA's policy of publishing only key presentations in detail, the editors found it necessary to condense several papers, eliminate transcribed discussions and abridge sessions that were "workshop" in nature. The result, we believe, is a succinct record that presents the major findings of the conference. Readers desiring further details, or supplemental materials, are encouraged to correspond directly with the participants whose addresses appear with each session in this document.

Dr. David L. Hanselman
Program Chairman

Mr. Austin F. Hamer
Arrangements Chairman

State University of New York
College of Environmental Science and Forestry
Syracuse, New York

Proceedings Editors

Dr. David L. Hanselman
Ms. Barbara Horn
Dr. Paul R. Mehne

CONTENTS

Introduction 1
Program 3
A Symposium: An Overview of Environmental Attitudes, Values and Ethics 7
Psychological Perspectives and Environmental Education, *Gus Root* 7
Religion and the Environment, *Richard A. Baer, Jr.* 9
Sin, The Judeo-Christian Heritage and Environmental Education, *Dave Steffenson* 10
General Session: Values, Ethics, Attitudes and the Economist, *George R. Armstrong* 12
A Symposium: Religion in America—Towards an Environmental Ethic 15
A Protestant Perspective, *James C. Logan* 15
Toward a Religious Ethic, *William A. Armani* 16
Making Religion Adaptive, *Richard J. McNeil* 16
Trends in Outdoor Recreation 18
Future Trends in Recreation Resources Management, *George H. Moeller* 18
Outdoor Recreation Trends and National Planning, *Robert F. Gift* 20
Gaming and Simulation, *Richard W. Presnell* 21
Measurement of Environmental Attitudes: Lessons Learned 22
State Environmental Education Plans and Legislation 22
State of the States: The Best Laid Plans, *Don Albrecht* 22
Mass Environmental Education—Can the Media Do the Job?, *Peter M. Sandman* 26
Affective Considerations in the Design of Outdoor Education Facilities, *Carl Vogt* 27
Beverage Container Deposit Legislation—A Case History, *Patricia D. Worden* 27
Union of Young Environmentalists, *David Kriebel* 28
Joint Meeting: Soil Conservation Society of America and Conservation Education Association 28
Field Program at Beaver Lake Nature Center, *John A. Weeks* 28
Exploring the Environment with Pre-Schoolers, *Phyllis S. Busch* 28
Potpourri of Environmental Issues 29
The Rand Tract and Webster's Pond, *Patricia D. Worden* 29
The Solid Waste Dilemma—Recovery, Reuse or Recycle?, *Charles McPhail* 29
Jamesville Quarry Surface Mine as a Residential Neighbor: Allied, Chemical Corporation, *E. John Perry* 30
A Symposium: The Ethics of Teaching for Attitudinal Change and Values 31
Documented Symposium: Role of Print and Nonprint Media in Environmental Attitudes 35
Report on an Environmental Education Evaluation, *Dean B. Bennett* 36
Value Clarification Sheets—A Strategy for Environmental Education, *Ray E. Quinn* 36
Communicating Attitudes and Ethics to Youths, *Phyllis S. Busch* 36
An Experimental Investigation of Attitude Change, *Richard H. Evans* 37
Why Environmental Organizations Fail To Educate, *Gerald Schneider* 39
Systems' Approach: A Value Oriented "Goods, Services and Effects" Approach to Environmental Use, *Gilbert Banner* 39
Environmental Studies: A Black Box (Missouri Environmental Studies Program), *Dean A. Rosebery* 43
Values-Clarification Strategies as a Means To Open Communication Between College Students and the Urban Community, *Mary Lynne Bowman* 44
The 21st Annual Business Meeting 46
Conference Participants 48

PROGRAM

SUNDAY, August 11

1 — 7 p.m. Brewster Dorm Lobby
Registration
Prof. Austin Hamer, Conference Co-Chairman, SUNY College of Environmental Science and Forestry

PRESS CLINIC

1:30 — 4:30 p.m. Brewster Dorm Lobby
News Releases for Local Newspapers
Ms. Maria Pafundi, Assistant for Community Relations, SUNY College of Environmental Science and Forestry

1:30 — 4:30 p.m. Brewster Dorm Lobby
Radio Interviews for Local Stations
Dr. Alex Dickson, Associate Professor Natural Resources, NYS College of Agriculture and Life Sciences at Cornell University

WORKSHOPS

2 — 4:30 p.m. Moon Library Patio
Natural History Photography
Mr. Michael Storey, Associate Director, Onondaga Nature Center, Inc.

2 — 4:30 p.m. TV Studio, Illick Hall
Basics of TV Production
Mr. R. Gary Tregaskis, Educational Communications Specialist, SUNY College of Environmental Science and Forestry

2 — 4:30 p.m. Room 5, Illick Hall
Evaluating Educational Media
Ms. Thea Teich, Technical Assistant Division of Environmental Education, School of Natural Resources, The Ohio State University

WELCOMES AND ORIENTATION

Opening statement of 21st National Conservation Education Association Conference by Dr. David L. Hanselman, Program Chairman.

7:30 — 7:45 p.m. Marshall Hall Auditorium
Introductions and Announcements
Dr. Harrison H. Payne, Vice President for Student Affairs, SUNY College of Environmental Science and Forestry

7:45 — 8:15 p.m. Marshall Hall Auditorium
Welcome to the College of Environmental Science and Forestry — Multi-screen Slide Presentation
Dr. John M. Yavorsky, Dean, School of Continuing Education, SUNY College of Environmental Science and Forestry

8:15 — 8:30 p.m. Marshall Hall Auditorium
Welcome from CEA President
Ms. W. Jane Westenberger, Director, Office of Information California Region, U.S. Forest Service

8:30 — 9:15 p.m. Marshall Hall Auditorium
An Environmentalist Looks at New York State
Dr. Richard B. Fischer, Professor Environmental Education, NYS College of Agriculture and Life Sciences at Cornell University

9:15 p.m.
Film Screenings Events Room, Brockway Hall
Exhibits Nifkin Lounge, Marshall Hall
Rap Sessions Rooms will be assigned
Ms. Carol Meusgeier, Community Relations Specialist, Region 7, NYS Dept. of Environmental Conservation

MONDAY, August 12

8:00 — 12 Noon Room 105, Marshall Hall
Registration

8:30 — 9:45 a.m. Marshall Auditorium
SYMPOSIUM: **An Overview of Environmental Attitudes, Values and Ethics**
Mr. Paul R. Mehne, Ph.D. Candidate, SUNY College of Environmental Science and Forestry • Dr. Augustin A. Root, Associate Professor Instructional Technology, Syracuse University • Dr. Richard A. Baer, Jr., Associate Professor, NYS College of Agriculture and Life Sciences, Cornell University • Rev. David Steffenson, Ecumenical Center, University of Wisconsin Green Bay

9:45 — 10:30 a.m. Marshall Auditorium
GENERAL SESSION: **Values, Ethics, Attitudes and the Economist**
Dr. George R. Armstrong, Professor and Chairman, Department of Managerial and Social Sciences, SUNY College of Environmental Science and Forestry

10:30 — 10:50 a.m. Nifkin Lounge, Marshall Hall
Coffee Break

10:40 — 10:50 a.m. Marshall Auditorium
FILM: **"Keeping Up"**

10:50 — 12 Noon Marshall Auditorium
SYMPOSIUM: **Religion in America — Towards an Environmental Ethic**
Dr. James C. Logan, Professor Systematic Theology, Wesley Theological Seminary • Rev. William A. Armani, Chaplin, Veterans Administration Hospital, Syracuse, New York • Dr. Richard J. McNeil, Associate Professor Natural Resources, NYS College of Agriculture and Life Sciences at Cornell University

12 Noon — 12:10 p.m. Marshall Auditorium
FILM: **"Keeping Up"**

12 Noon — 1:30 p.m. Brockway Hall
Lunch

PARTICIPATION WORKSHOPS

1:30 — 2:30 p.m. Room 111, Marshall Hall
Writing for the Public
Dr. Richard B. Fischer, Professor Environmental Education, NYS College of Agriculture and Life Sciences at Cornell University

1:30 — 2:30 p.m. Room 110, Marshall Hall
Values Clarification Techniques
Dr. Dean B. Bennett, CEA Director and Director of Maine Environmental Education Project Title III, E.S.E.A.

1:30 — 3:30 p.m. Events Room, Brockway Hall
USFS — Urban Investigation
U.S. Forest Service Team, Ms. W. Jane Westenberger, Leader, Director, Office of Information California Region, U.S. Forest Service.

1:30 — 2:30 p.m. 319 Marshall Hall
Instructional Planning Through Computer-Based Resource Units
Dr. Edward J. Ambry, CEA Director and Director New Jersey State Council for Environmental Education

1:30 — 3:30 p.m. Moon Library Conference Room
Slide and 8MM Presentations for Environmental Education (Hands On Workshop)
Brenda Cross, Eastman Kodak Co.

2:30 — 3:30 p.m. Room 111, Marshall Hall
Writing for the Public
Dr. Richard B. Fischer, Professor Environmental Education, NYS College of Agriculture and Life Sciences at Cornell University

2:30 — 3:30 p.m. Room 110, Marshall Hall
Values Clarification Techniques
Dr. Dean B. Bennett, CEA Director and Director of Maine Environmental Education Project Title III, E.S.E.A.

2:30 — 3:30 p.m. 319 Marshall Hall
Instructional Planning Through Computer-Based Resource Units
Dr. Edward J. Ambry, CEA Director and Director New Jersey State Council for Environmental Education

SPECIAL INTEREST GROUPS

1:30 — 2:30 p.m. Room 5, Illick Hall
Trends in Outdoor Recreation
Dr. George Moeller, Project Leader (Forecasting Forest Recreation Participation), Northeastern Forest Experiment Station, U.S. Forest Service • Mr. Robert Gift, Northeastern Regional Office, U.S. Dept. of Interior, Bureau of Outdoor Recreation • Mr. Ted Wood, Tourism Industry Specialist, Federal Energy Administration, Washington, D.C.

1:30 — 2:30 p.m. Room 317, Marshall Hall
Gaming and Simulation
Dr. Richard W. Presnell, Assistant Professor, University of Wisconsin Green Bay • Mrs. Martha Munzer, Author, Consultant

2:30 — 3:30 p.m. Room 5, Illick
Measurement of Environmental Attitudes: Lessons Learned
Mr. Paul R. Mehne, Ph.D. Candidate, Instructional Development and Behavior Modification, SUNY College of Environmental Science and Forestry • Mr. Cary J. Goulard, Ph.D. Candidate, Environmental Education and Human Ecology, SUNY College of Environmental Science and Forestry

2:30 — 3:30 p.m. 317 Marshall Hall
State Environmental Education Plans and Legislation
Ms. Nancy J. Ayers, Environmental Education Consultant, Executive Director, Susquehanna Environmental Education Association, Endwell, New York

3:30 — 3:50 p.m. Nifkin Lounge, Marshall Hall
Coffee Break

PAPERS AND REPORTS

3:50 — 4:10 p.m. Marshall Auditorium
Mass Environmental Education — Can Media Do the Job?
Dr. Peter Sandman, Assistant Professor, School of Natural Resources, The University of Michigan

3:50 — 4:10 p.m. Room 5, Illick Hall
Beverage Container Deposit Legislation — A Case History
Mrs. Patricia D. Worden, Chairperson, Ad Hoc Committee for Beverage Container Legislation, DeWitt, New York

4:10 — 4:30 p.m. Marshall Auditorium
Affective Considerations in the Design of Outdoor Education Facilities
Mr. Carl Vogt, Minnesota Environmental Sciences Foundation, Inc.

4:10 — 4:30 p.m. Room 5, Illick Hall
Union of Young Environmentalists
Mr. David Kriebel, Student, University of Wisconsin Green Bay; Staff, Union of Young Environmentalists

5:30 — 6:30 p.m. Brockway Dining Hall
CEA President's Reception (followed by dinner)
Ms. W. Jane Westenberger, President, Conservation Education Association

7:30 p.m.
Film Screenings Events Room, Brockway Hall
Exhibits Nifkin Lounge, Marshall Hall
Rap Sessions Rooms will be assigned
Ms. Carol Meusgeier, Community Relations Specialist, Region 7, NYS Dept. of Environmental Conservation

8:00 — 9:30 p.m. Events Room, Brockway Hall
Rap with the CEA Board
Dr. Edward J. Ambry, CEA Director and Director New Jersey State Council for Environmental Education

TUESDAY, August 13

8:30 a.m. War Memorial
JOINT SCSA — CEA MEETING: **New Priorities and Policies for Land Use Planning (Board buses to Syracuse War Memorial)**

9:15 — 10:00 a.m. War Memorial
Land Use and Urban Growth
Ms. Virginia Nugent, Chairperson, Land Use Committee, League of Women Voters, Washington, D.C.

10:00 — 10:45 a.m. War Memorial
Education for New Patterns of Land Use
Walter J. Bogan, Director, Division of Technology and Environmental Education, U.S. Office of Education

10:45 — 11:00 a.m. War Memorial
"Underfoot" — A Multi-Image Slide Show by Soil Conservation Society

11:00 — 12 Noon War Memorial
Controlling Land Use Through Environmental Laws
Mr. Michael L. Glenn, Chairman, Land Use Policy and Information Coordinating Committee, Environmental Protection Agency, Washington, D.C.

12 Noon — War Memorial
Field Trips
Board buses — box lunch at first stop

12:00 — 4:45 p.m. — Beaver Lake Nature Center
Process Education • Educator and Resource Specialists' Team • Ecosystem Analysis (Limit 80)
Mr. John A. Weeks, Director, Onondaga Nature Centers, Inc. and Onondaga Nature Center Staff with assistance U.S. Forest Service Environmental Education Team

12:00 — 4:45 p.m. — 110 Marshall Hall
Exploring the Environment with Pre-Schoolers (Limit 40) Demonstrate with children. Participants' workshop, Dr. Phyllis S. Busch, Author, Lecturer, Consultant

12:00 — 4:45 p.m. — At Site
Potpourri of Environmental Issues: (Limit 80 for all three)
(1) Rand Tract — An Inner-City Environmental Education Resource
(2) Solid Waste Shredder — Part of the Solution
(3) Allied Chemical — A Surface Mine as a Residential Neighbor
Mrs. Patricia D. Worden, Trip Leader, Coalition Advocating Protection of the Environment (CAPE), DeWitt, New York • Mr. E. John Perry, Manager, Jamesville Quarry, Allied Chemical Corp., Jamesville, New York

5:00 p.m. — At Sites
Board buses for Picnic

6:00 — 8:00 p.m. Fayetteville-Manlius Sportsmen's Club
INCREDIBLE EDIBLES — Picnic
Mrs. Debbie Boots, Physical Environment Involvement Group of Junior League, Baldwinsville, New York

8:00 p.m.
Board buses for return to Campus

8:30 p.m.
Film Screenings — Events Room, Brockway Hall
Exhibits — Nifkin Lounge, Marshall Hall
Rap Sessions — Rooms will be assigned
Ms. Carol Meusgeier, Community Relations Specialist, Region 7, NYS Dept. of Environmental Conservation

WEDNESDAY, August 14

8:30 — 9:45 a.m. — Marshall Auditorium
SYMPOSIUM: **The Ethics of Teaching for Attitudinal Change and Values**
Dr. Barry W. Jamason, Coordinator Environmental Education, NYS Education Department • Dr. John Gustafson, Professor, Biology Department, SUNY at Cortland and Vice Chairman of State Temporary Commission on Youth Education in Conservation • Noel F. McInnis, Director, The Center for Curriculum Design • Dr. Richard Baer, Jr., Author, Consultant in Environmental Values

9:45 — 10:15 a.m. — Nifkin Lounge, Marshall Hall
Coffee Break

10:15 — 11:45 a.m. — Marshall Auditorium
DOCUMENTED SYMPOSIUM: **Role of Print and Nonprint Media in Environmental Attitudes**
Mr. Holt Bodinson, Moderator, Director of Educational Services, NYS Dept. of Environmental Conservation • Mr. Robert F. Hall, Editor, *The Conservationist*, NYS Dept. of Environmental Conservation • Ms. Grayce Papps, Project Director/Producer, "The Land and Me", Maine Public Broadcasting Network • Mr. Ray Mulderick, Environmental Protection Agency, Washington, D.C.

11:45 — 1:15 p.m. — Brockway Hall
Lunch

1:15 — 3:00 p.m. — Events Room, Brockway Hall
USFS — Urban Investigation
U.S. Forest Service Team, Ms. W. Jane Westenberger, Leader, Director, Office of Information California Region, Forest Service

PAPERS AND REPORTS

1:15 — 1:30 p.m. — Marshall Auditorium
Report on an Environmental Education Evaluation
Dr. Dean B. Bennett, CEA Director and Director Maine Environmental Education Project Title III, E.S.E.A.

1:15 — 1:30 p.m. — Room 5, Illick Hall
Why Environmental Organizations Fail To Educate
Mr. Gerald Schneider, Consultant, Environmental Matters and Planned Change

1:30 — 1:45 p.m. — Room 5, Illick Hall
Systems Approach: A Value Oriented "Good Services and Effects" Approach to Environmental Use
Dr. Gilbert Banner, Consultant, Environmental Social Sciences and Education

1:30 — 1:45 p.m. — Marshall Auditorium
Value Clarification Sheets — A Strategy for Environmental Education
Dr. Ray Quinn, Assistant Professor, Dept. of Wildlife and Fisheries Sciences, Texas A&M University • Dr. Delmar Janke, Associate Professor of Science Education, Dept. of Educational Curriculum and Instruction, Texas A&M University

1:45 — 2:00 p.m. — Marshall Auditorium
Communicating Attitudes and Ethics to Youth
Dr. Phyllis S. Busch, Author, Lecturer, Consultant

1:45 — 2:00 p.m. — Room 5, Illick Hall
Environmental Studies: A Black Box (Missouri Environmental Studies Approach)
Dr. Dean A. Rosebery, Head, Division of Science, Northeast Missouri State University

2:00 — 2:15 p.m. — Marshall Auditorium
An Experimental Investigation of Attitude Change
Dr. Richard H. Evans, Associate Professor Marketing, Syracuse University

2:00 — 2:15 p.m. — Room 5, Illick Hall
Value Clarification Strategies as a Means to Open Communication Between College Students and the Urban Community
Dr. Mary Lynne Bowman, Associate Professor Environmental Education, The Ohio State University

"Putting it together . . ." — *Develop set guidelines, resources, etc., for implementing environmental attitudes, ethics, values:*

2:15 — 3:00 p.m. — Room 5, Illick Hall
"Putting it together" — K-6
Dr. Howard Stackpole, Principal, Porter Elementary School, Syracuse, New York

2:15 — 3:00 p.m. — Room 110, Marshall Hall
"Putting it together" — 7-12
Paul Markovits, Graduate Assistant, Science Education Dept., Syracuse University

2:15 — 3:00 p.m. Room 111, Marshall Hall
"Putting it together" — College
Dr. William C. Ritz, Director, Environmental Studies Institute, Syracuse University

2:15 — 3:00 p.m. Room 317, Marshall Hall
"Putting it together" — Adult - Public
Dr. Harlan B. Brumsted, Associate Professor Natural Resources, NYS College of Agriculture and Life Sciences at Cornell University

3:00 — 3:15 p.m. Nifkin Lounge, Marshall Hall
Coffee Break

3:15 — 4:30 p.m. Room 5, Illick Hall
Annual CEA Business Meeting
Ms. W. Jane Westenberger, President, Conservation Education Association

6:30 — 9:30 p.m. Brockway Hall
Banquet — Awards — Speaker — Adjourn

ACKNOWLEDGMENTS

On behalf of the Conservation Education Association and the College of Environmental Science and Forestry, the Conference co-chairmen, David L. Hanselman and Austin F. Hamer, extend their sincere thanks to the following for their helpfulness:

Coalition Advocating Protection of the Environment (CAPE)
NYS College of Agriculture and Life Sciences at Cornell University
Fayetteville-Manlius Rod and Gun Club
Junior League of Syracuse, Inc.
New York State Conservation Council
New York State Department of Environmental Conservation
New York State Sea Grant Program, Cornell
Onondaga County Federation of Sportsmen's Clubs, Inc.
Onondaga Nature Centers, Inc.
Syracuse University

. . . . and the many individuals, institutions of higher education, and the public and private organizations which have contributed so much to the success of the program.

A SYMPOSIUM

AN OVERVIEW OF ENVIRONMENTAL ATTITUDES, VALUES AND ETHICS

Discussants: DR. RICHARD A. BAER, JR., *Associate Professor*, Department of Natural Resources, New York State College of Agriculture and Life Sciences, Cornell University, Fernon Hall, Ithaca, New York 14850

DR. AGUSTIN A. ROOT, *Associate Professor*, Area of Instructional Technology, School of Education, Syracuse University, Syracuse, New York 13210

REV. DAVID STEFFENSON, *Campus Minister*, Shorewood Ecumenical Center, University of Wisconsin—Green Bay, Green Bay, Wisconsin 54302

Moderator: DR. PAUL R. MEHNE, Educational Communications Section and Department of Managerial and Social Sciences, State University of New York College of Environmental Science and Forestry, Syracuse, New York 13210

PSYCHOLOGICAL PERSPECTIVES AND ENVIRONMENTAL EDUCATION

Gus Root

What do psychologists have to contribute to the plans and activities of those concerned with environmental education? A variety of perspectives and some practical recommendations for action. Psychologists are concerned with behavior—with *understanding* current performances, with accounting for the *learning* that led to today's behavior, and with suggesting how current events can be designed to *change* present performance. The explanations that psychologists provide for human events are as many-hued as Jacob's fabled coat. But among the diverse points of view that psychologists take as they look at human activities, there are some perspectives that are particularly meaningful to us, here.

It is useful to think of three different psychological perspectives: the point of view that tends to explain behavior in terms of events *within* the individual (the *internalist* position); explanations that tend to emphasize the interaction between an individual and his/her environment (the *interactionist* position); and explanations that account for human behavior in terms of events that are almost wholly outside of the individual or group (the *externalist* position). For each of these three psychological orientations, I'd like to give illustrations drawn from observations of both environmentalists and educators, and make suggestions on how environmental educators might *use* these perspectives to enrich their programs and enhance their effectiveness.

The Internalist Position

There are many psychologists who seek explanations for human behavior in terms of events and processes within the single individual. From this point of view, critical factors that influence performance are individual perceptions, attitudes, motivations, values, mental health and self-actualization tendencies.

An advertiser attempts to influence both public knowledge and emotional reactions to a product (soap). an organization (St. Regis Paper Company) or an activity (salvaging aluminum cans). Exhortations, appeals to emotion, and the display of examples—all of these are efforts to change something *within* the individual, anticipating that that individual will thereafter act differently because of new understanding, perceptions and values.

An educator or social-change agent gives lectures, prints books, shows films and provides demonstrations in order to describe and show what is possible and desirable.

In a parallel vein, foresters and environmentalists with this orientation tend to study the characteristics of individual plants and species, and are concerned with plant and animal varieties that are disease resistant, hardy, fruitful and have high yields.

There are rich traditions and vigorous activities among those who attend primarily to the characteristics of the individual organisms they study. Psychologists with this orientation have much to offer us, and can provide unique and valuable insights related to the concerns of this conference. Most of us would agree that we need to encourage and support educational experiences which develop sensitivity to and concern for our immediate and global environments, and foster a sense of personal responsibility for the conditions of life.

Educational Implications of the Internalist Orientation

1. *Choices.* The humanistic psychologist would recommend that learners be given many opportunities to make relevant choices, to examine a number of alternatives and *commit* themselves to an activity or point of view, to have access to information on *both* sides of a controversy, and to be free to make their own choices. This would suggest that environmental educators display a range of possible policy decisions, and the realistic outcomes of each position (including the positions advocated by their opponents!). Thus, a Nature Center might display both a polluted and a reclaimed body of water, with the costs (time, money and talent) and benefits (beauty, use and health) of each.

2. *Motives and Values.* The cognitive or developmental psychologist would recommend providing opportunities to clarify individual values through repeated opportunities to examine an issue (with some inherent conflicts), take a stand on the issue, and then respond to clarifying questions in a nonpunitive situation. Thus, a public appeal for incorporating new wood lands into a Federal Park might display the full range of options and, in a simulated setting, provide both the opportunity to make a choice and, then, a number of questions to explore and clarify the values and motives underlying whatever choice was made.

But it is *not enough* to develop a new strain of corn; we must also match the seed to an optimum environment of water,

nutrition, sunlight and temperature. The performance of any organism is a function of *both* its internal characteristics *and* its interaction with its environment. Similarly, it is not enough for educators to try to change factors *within* individuals in their efforts to bring about substantially different performances, we must also design for appropriate individual-environment interactions.

The Interactionist Position

There are psychologists who emphasize the importance of the interaction of an individual with his/her environment over extended periods of time. They tend to explain human performances primarily in terms of the intensity and timing of three functions: the *context* or setting within which the person is performing (the stimulus conditions), the *actions* the *effects* or results that occur as a function of the person's behavior (the consequences experienced). Typical explanations that take this interactionist position might be: "Well, under those conditions, who *wouldn't* act *that* way?" or "His family arranged things and put strong pressure on him; when he acted appropriately, they gave him all kinds of rewards."

Foresters with this interactionist orientation would tend to assume a "managerial" stance relative to the environment. They would select and manage particular varieties of plant and animal life as appropriate to the local conditions; they would adjust the water, nutrition, regular care and harvesting in order to obtain the maximum yield from each species. If things were not going quite as the "manager" thought they should, he'd be apt to look for ways to modify the environment or the treatment he controlled, to optimize the species-environment interaction in order to obtain the desired performance.

Educational Implications of the Interactionist Orientation

1. *Setting*. The interactionist educator would recommend that the problem situation be clarified, that any setting or presentation emphasize discriminations between situations that should be attended to and other situations that should be ignored or avoided, and that the important features of the setting be made vibrant, intense and dominant.
2. *Behavior*. The person-environment educator would recommend that the potential learner be given many opportunities to *practice* desired performances within the appropriate settings, and make finer and finer discriminations concerning what behaviors go with what situations. Learning should be active, rather than passive; practice is an essential characteristic of learning.
3. *Consequences*. The interactionist would recommend that each performance be followed by an appropriate effect (a reward that balances the difficulties of the performances--neither too much nor too little). Research and experience have pointed out the value of controlling the time between a performance and its consequences—the time should be short and consistent during the initial stages of learning a new behavior, and longer and variable as the performance becomes more habitual and more proficient.

Here again, there are unique and valuable insights that can come to the environmental educator from assuming (at least temporarily) this interactionist orientation. If the results of his/her education efforts were not quite what they might be, there would be three kinds of things that could be modified: the situational stimuli provided the learner, the practice behaviors that were brought out during learning, and the kinds and varieties of consequences that were available as a result of different types of performances.

But, as before, even these two points of view are inadequate to explain or account for the full range of events which the environmental educator could adjust to influence learners' performances. There are also factors in the "external" environment which can be changed in order to obtain more desirable behavior.

The Externalist Position

Still other psychologists tend to think of human behavior as the outcome of many factors in the external, nonhuman world—such as the introduction of the electric light and the computer, the development of a private-vehicle rather than a public transportation system, and the invention of new pesticides. The "systems" psychologist thinks about human behavior as the result of the complex interactions among many different subsystems (one of which may be an individual or group). No characteristic of any single component or subsystem, no single relationship between components or subsystems, nor any subset of the whole is determinative or predictive of the system's performance. Rather, all factors interacting over time (with feedback and time-delayed actions) influence performance. Fortunately for the educator, a large part of human learning can be accounted for by the effect of a relatively small number of variables: teachers' behavior, the quality and variety of the materials and facilities, peer influences on the learner and home- and work-environment factors.

Foresters and environmentalists with this kind of externalist-system orientation tend to think in terms of ways to influence population growth, adjust the tax structures, control capital investments in industrial facilities, pass laws for the control of pollution, and influence the building of new roads, parking lots and motels.

Educational Implications of the Externalist Orientation

1. *Institutional Structure*. The system psychologist would recommend restructuring the information flow and decisionmaking structures of organizations so that relevant data is gathered, integrated and displayed for the benefit of both policymakers and the general public which provides the resources and experiences the effects of those policies.
2. *Modeling*. The system psychologist would recommend that educators estimate the 3-5 factors that are most likely to affect the learner outcomes of primary interest, specify the functional relationships among these factors (as perceived by those within the system), and construct mathematically-based models of these factors and relationships. Such models would have the advantages of being public and thus open to examination and validation, being precise rather than ambiguous as are the "mental" models often held by those who make educational decisions, and being manipulable so that the probable effects of alternative policy decisions can be tested quickly and inexpensively on the model rather than in "real life" situations where feedback is slow and costly.

An orientation which tends to perceive human behavior as the outcome of a complex network of factors, has much to recommend itself to environmental educators. When things are not going quite as we might like, this viewpoint opens up the possibilities for both new understanding of the dynamics of the system's behavior as well as possibilities for new approaches through policies, law, tax structures and organizational relationships. As has been pointed out many times (Laszlo, *World System:* Braziller, 1973; Forrester, *World Dynamics:* Wright-Allen, 1971), large complex social systems such as educational and governmental structures generally function in a way that is counter to our intuition about how they function; thus, all too often, the action we take to correct some undesired situation will either be unproductive or will worsen the very condition we sought to improve.

In Summary

There are many kinds of psychologists just as there are many types of foresters and environmentalists. No one group pretends to have a hand on the "whole truth" about human behavior. Each position provides some potential insight to a portion of the variability we all see in our own performances. Faced with our uncertain and turbulent circumstances, we need all the insight and wisdom available to move toward what might be possible for the human race. These three psychological orientations can work together without conflict, to enrich the understandings and expand the possible actions of environmental educators. In seeking to weave a new educational tapestry, the internalist may provide the threads of the warp, the interactionalist may provide the woof, and systematist may provide the pattern that makes the product both harmonious and beautiful.

RELIGION AND THE ENVIRONMENT

Richard A. Baer, Jr.

How does religion contribute to our understanding of the environment? An obvious answer is that most religions either explicitly or implicitly present a philosophy of nature. According to Lynn White, Ian McHarg, and others, for example, the Judeo-Christian tradition has fostered an exploitative attitude towards the environment. In my early work on environment, starting back in 1965, I was mainly concerned to develop a new theology of nature, one that would emphasize stewardship and the need to recognize and protect the values in nature that go beyond the purely instrumental value nature has for man.

The development of such a theology of nature will remain an important task for many years. But I am increasingly convinced that religion also has some important things to contribute to the environmental issue by helping illuminate how man understands himself and how this self-understanding affects his treatment of his environment. In other words, I now believe that the healing of nature will come about only with the healing of persons and the reshaping of institutions. Let me illustrate this point.

There is much evidence, I believe, that modern Western man has an overdeveloped need to be in control—of himself, of other people and finally of his environment. If we go back to the early years of the development of modern science, we find Descartes, Francis Bacon, Leibniz and others insisting that knowledge gives man control over the world about him. With this power man is able to shape his world in new ways and thus increase his wealth and his chances for a good life. Indeed, the great success of modern science lies precisely in the greater control it gives man over his achievement. The modern scientific method constitutes one of the great intellectual breakthroughs of all time. It has enriched all of our lives.

There is nothing wrong, then, with learning to control our world. But such an emphasis on control is only one way of relating to the world, and I would argue that we have distorted our lives by placing too much emphasis on it. In the Western academic tradition we have made such a lop-sided commitment to knowledge as power and control that we have become woefully deficient in other kinds of understanding, including intuition, aesthetic and religious understanding, and wisdom. Art, religion, music and poetry at best play only a peripheral role in the total life of the modern university. Although we are able to deal brilliantly with man as to the object of his own study and scrutiny, when it comes to understanding man as subject, there are great problems. This is one of the reasons, for example, why the term "nature" is so difficult to deal with in our discussions of environment. Is man a part of nature? Obviously. Can man be understood fully within the category of nature? That question is much harder to answer. For instance, if he is fully a part of nature, is it possible for him to act unnaturally? Are not pollution, environmental destruction, etc., simply a natural manifestation of who man is? I wish we had time to look at some of the implications of these fascinating and important questions.

As Theodore Roszak and others have pointed out, the only truly "reliable knowledge" in the university setting is objective, analytical, empirical knowledge.[1] Our very use of language betrays our bias. We speak of hard facts, incisive arguments, the cutting edge of a discipline, attacking problems, a keen mind. What an incredibly aggressive view of the mind and of intellectual processes! It quite overlooks the fact that many of the most important and meaningful experiences of our lives are very soft, fluid, changing, subtle. Much of life can be understood only through art, and through myth, symbol, analogy, metaphor, and other tools of the poet and novelist. The mystic would say that there comes a point when *all* words become inappropriate. One can only remain silent.

Our lop-sided commitment to knowledge as control in the Western academic tradition means that already in our schools and universities we develop in our students an essentially manipulative orientation towards life. The easy way in which industry, technology, and the Army Corps of Engineers are presented as the environmental villains, and the university, pure science, and perhaps the Sierra Club are placed on the plus side of the environmental ledger, simply does not do justice to the world in which we live, for the fundamental orientation towards reality in the modern university is not essentially different from that of industry. Both institutions are control oriented, both measure success in largely quantitative terms, both are intent on gaining power over nature, both are extremely aggressive in orientation.

Western man's compulsive need to exercise control over his world is perhaps nowhere more clearly seen than in his attitude towards death. His consistent refusal to deal openly with the meaning of his own finitude and mortality may well lie in the fact that death is one of the most obvious points where he is unable to maintain control over himself and his environment. Our culture has few of the rites of passage so common in most primitive cultures through which the adolescent learns to confront death—the male through the fabricated dangers of the initiation ordeal, the female more often through the very real dangers of childbirth. Rather, we have largely repressed the meaning of death and refuse to talk openly about it. We cover over its reality with elaborate cosmetics, embalming, soft music and flowers. In contrast to most primitive cultures, where death was viewed as a rite of passage into fuller life, we see death as confrontation with nothingness and the abyss. Death is annihilation, the final destruction of our personal identity. It is indeed the self's ultimate loss of control.

This analysis necessarily has been brief. What, if anything, can we learn from it? Several things, I believe.

In the first place, our schools and universities will continue to foster an aggressive and manipulative mind set in students until we broaden our educational structures and

operations to include ways of relating to the world other than that of modern science. As long as we insist on being in control, on gaining power over the world, the world will remain the object of our manipulation. That is one way of relating to the world, and an important way. But other modes of relationship would open up to us new forms of understanding. Contemplation, wonder, awe, silence, for example, all make it possible for the world to speak to *us*, to change *us*. The development of what theologian Bernard Meland calls the appreciative consciousness demands that we become less aggressive, more sensitive to the multitude of subtle stimuli from our environment, more willing to listen, more open to mystery.[2] Some kinds of knowledge are essentially subjective and are totally impossible apart from a context of love, trust, and the refusal to manipulate.

The move towards a broader concept of education probably would be helped by the realization that classical and medieval culture consistently held that ideas are not just for the sake of control but also for enjoyment. Our English word "school" derives from the Greek *schole* and the Latin *schola*, terms which mean "leisure." School was the place where one enjoyed his leisure playing with ideas. In his book *Leisure: the Basis of Culture*, philosopher Josef Pieper points out that the Middle Ages distinguished between the understanding as *intellectus* and the understanding as *ratio*. *Ratio* was seen as "the power of discursive, logical thought, of searching and examination, of abstraction, of definition and drawing conclusions."[3] *Intellectus*, on the other hand, was understood to be the power of direct intuition and was associated with the passive receptivity of the contemplative. The concepts "intellectual work" and "intellectual worker" simply did not exist during the Middle Ages. *Intellectus* rather came into its own when man ceased trying to manipulate and control his world and simply remained open to the gift of inner illumination and understanding.

My plea is that our schools and universities return to this broader understanding of the life of the intellect in the recognition that empirical-analytical-objective thinking which gives us power over the world about us, albeit a rich and fruitful form of understanding, by no means exhausts the possibilities of the human mind.

Secondly, I do not think we will begin to understand the acquisitiveness of modern Western culture, the insatiable desire for more and more power and things, till we realize that we are probably dealing with a compulsive and largely unconscious need to maintain control of ourselves, of others, and of the world about us. We see death as diminishment. One way to hold death at bay, therefore, is to keep growling: more and more, bigger and bigger, Don't count the cost. Don't ask what the effects will be for our children and grandchildren. Just keep expanding. So great has been our psychological need to keep growing, to keep producing more energy and things, that we simply have not been able as a nation realistically to assess the long-range implications of our economic activities. To doubt the value of growth as a national goal or to express uncertainty about technology's "limitless" ability to provide for our expanding "needs" is not just to question the conventional wisdom but is to speak heresy. It is to attack the efficacy of the cult, the power of the technological sacraments to continue to perform the miracle of transubstantiation, to multiply the loaves and the fishes, to improve, to perfect, to sanctify "undeveloped" nature. Such growth, of course, is no longer a rational procedure at all, but rather the result of a deep-seated psychological need to gain control over death, to create the illusion that we are more than limited, finite beings.

Americans are frequently called materialists. But I find that label singularly inappropriate. Rather than loving things, most of us simply use them as a means of hiding our insecurity in the face of death. My evidence is very simple. Witness how quickly things move from our forests, mines, and fields to our factories, our stores, our homes, our municipal dumps. There's a kind of obscenity about our flow-through, flush-down, throw-away culture. Incidentally, this is one thing we can't easily blame on Judaism or Christianity, for the Biblical witness on this point is very clear—in spite of many perversions throughout the history of the church: The world God created is basically good. It is God's intent that man love the earth, even though he must not love it inordinately and use earthly things to cover over his own inner emptiness. As theologican Joseph Sittler has said, God is the greatest materialist of us all, for, in the words of the priestly editor of Genesis, he not only created the world but also declared it *"very good."*

Finally, it should be apparent from what I've already said, that the environmental crisis will not prove susceptible to purely technological solutions, for it is essentially a crisis of man's understanding of himself. To be sure, new and imaginative technologies are sorely needed. Substantial changes will have to be made in our economic and political institutions. But until we recognize that man's spirit itself is the ultimate front line of the environmental crisis, we will continue to nibble away at the edges.

NOTES

[1]Theodore Roszak, *The Making of a Counter Culture* (1969), p. 208.

[2]Bernard Meland, *Higher Education and the Human Spirit* (1958), Chap. V.

[3]Josef Pieper, *Leisure: the Basis of Culture* (1963), pp. 26-29.

SIN, THE JUDEO-CHRISTIAN HERITAGE AND ENVIRONMENTAL EDUCATION

Dave Steffenson

The depths of human experience historically have been understood through symbol, myth and drama. The Judeo-Christian heritage is no exception with the Bible as the main source. The biblical drama of relationships between God and human beings begins with the primal myth of Creation.

Significantly, the generic people, Adam and Eve, are created to dwell in the Garden—an eco-system. It is a place of *shalom* (love, peace, wholeness), harmony and symbiosis. God is the owner, the Creator who makes it all possible, the Ultimate at the depths of existence. Adam and Eve have a definite place—a human niche in the ecology of Creation with a specific and unique role to play. They are stewards or the caretakers of the Garden, to tend, nurture and live in harmony with the *oikos* (world-house or ecology). Their job is building and maintaining the ecological *community* in order that all elements, including human beings, may become what God intends.

But in creating people God gave human freedom as well as other rather unique gifts such as reason, self-consciousness, comprehension of time and history, the ability to manipulate symbols, a high capacity for communication, the ability to order values, and a sense of humor. Radical freedom and these other human gifts are the source of human creativity as well as human sin.

The first sin was ecological! (Rolston) Sin, literally translated, is "missing the mark" of being human. Humans uniquely know they will die, and this knowledge coupled with human freedom leads to anxiety and restlessness. The

mythological first couple were successfully tempted out of their ecological niche and its corresponding responsibilities. They sought to become God, to have power over the garden, to become superhuman, to regard themselves as their own end rather than as part of an ecological dynamic of means and ends. They sought to be more human through inhuman ends.

This root Sin is Pride (*hubris*), or the general inclination of all persons to overestimate their virtues, powers and achievements; and usually manifested in the will-to-power (Reinhold Niebuhr). Sin is the root cause of the environmental crisis from the Judeo-Christian perspective, and the environmental crisis is one pervasive form of the biblical/human drama.

The will-to-power, coupled with freedom, allows exploitation of the earth through the extension of human power by means of uncontrolled technology. Environmental ignorance and selfish blindness allow us to push our expansionist, short-range goals. The results are alienation, resource depletion, pollution, sickness, famine, war, and finally eco-collapse and death.

Sinful pride has another dimension. The majority of people do not *have* much power. They may follow and support the minority that do, or they at least feel helpless before them, but their will-to-power takes a different form as the masses seek to assuage their anxieties over inevitable death and powerlessness. They escape and deny their humaness, not by direct power, but by demanding satiation and evading pain and responsibility.

Hedonism through consumption gives the illusion of mastery over nature while avoiding responsibility, however temporary the illusion. Some carry this form of sin, the will-to-satiation and escape, to the extreme of sensate suicide (gluttony, alcoholism, drug addiction sexual obsession, psychosis, etc.) or even suicide itself.

Either route, power or escape, results in the hell of allienation and separation from other persons and from that which fulfills humanness (God as love). The final outcome is unfulfilled death.

It is a spiral of sin at the heart of ecological dynamics that is at fault. Power-seeking is fueled by the greedy demands of the pleasure-seeking. Growth economics depends on the will-to-satiation expanding unabated, basing our well-being on the most ignoble human motivations. Those in power exploit our selfishness, and technology has allowed them to succeed quite well. This has hidden from us the knowledge that technological success in delivering the "good life" has been at the expense of the earth and its resources beyond the point where it can be maintained in the future. The vicious spiral builds and whirls in a synergistic and exponential fashion pointing to probable collapse, death and eventual restoration of the ecological balance (probably without human beings).

In the global village, these forces are playing out the human drama of sin in epic fashion. Fueled by hedonistic consumption and waste, the "industrial-expansionist system" (capitalist and socialist) seeks more and more power over nature through resource depletion and technology, leading to pollution, population explosion, sickness, war and collapse/death. Necessarily this also requires exploitation of the larger share of the world's people. Inequality, loss of freedom and eventual totalitarian control are also axiomatic.

In the developing "Third World," as well as for a large number of people in the developed world, this systematic exploitation and oppression leads to underconsumption (starvation) with resulting brain damage and sickness; under-utilization and waste of natural resources through imperialistic theft and inappropriate means of development; and revolutionary anarchy and war with all of its nuclear ramifications.

From the standpoint of the Judeo-Christian heritage, I would make three affirmations:

1. God is still God, and still owns and controls the Garden. Philip Slater points out that it is the height of individualistic folly (sin) to assume an environmental crisis. *We* have a crisis, but not God! God's creative processes move on, and the balance is being restored and *will be* restored. The Garden Earth will continue and prosper with or without us.

What we regard as an environmental problem (e.g., the energy crisis) is one of God's mechanisms for restoring homeostasis to the global eco-system. Whatever environmental crisis there is for us, we are *not* called to "solve" it. God is already solving it, and we must beware that human environmental problem-solving can be another vehicle for ecological sin just as exploitive power and escape are.

The human problem to be solved is whether (and how) we will be part of God's solution, or will the ultimate solution be arrived at in spite of us, without us, or even through our demise? The hopefulness in this is that God has given us the freedom to choose. Yet it should also serve to keep environmentalists humble, and keep us focused where we can do the most good. As Pogo says, "We have met the enemy, and he is us." Whether we will choose to move back to our human ecological niche depends a great deal on changing our attitudes and basic values. As Pierre Dansereau says, "the quality of one's inscape determines the quality of the landscape."

2. From the Judeo-Christian viewpoint, *JUSTICE* is the priority human task if we are to ever achieve reintegration and harmony with our proper ecological niche. Just as Jesus and the prophets were on the side of the poor and oppressed, the environmental movement must be on the side of the world revolution that is seeking justice and quality of life for all.

3. The values arena is the best handle we have for action. We need heightened consciousness and broadened understanding of the dynamics of human values interacting with the environment—both as to the present destructive interactions and the potentialities for positive interaction.

Conviction (awareness) of sin has been the traditional place one begins in the salvation process (reconciliation with God and unity with Creation). The major role of education, and environmental education in particular, in this clarification process should be obvious. We are gathered here this week to seek effective means for doing this.

Let us be mindful that it is no foreign ideology we oppose. We are seeking to find alternatives to what we have been taught are high ideals, worthy motives and good ends. As someone said, our task is to redefine what we have considered to be normal behavior up to this point. And we will be opposed by mighty entrenched vested interests.

Environmental education cannot save us. Our sin is so pervasive there is no way we can, by ourselves, get enough understanding nor enough will power to make the necessary changes. However, the Judeo-Christian faith affirms that we can move from awareness and conviction, where environmental education has a major role, toward surrender of our isolated independence and selfishness, and toward liberation from all that keeps us from fulfilling our human destiny. In the process of opening ourselves to liberation, we find the grace of God giving us unexpected and undeserved power to achieve the ecological health and wholeness we need and desire, to be reconciled with God and Creation.

---

* The complete transcript for this symposium was published by ERIC Information Analysis Center for Science, Mathematics, and Environmental Education, 400 Lincoln Tower, Columbus, Ohio 43210 (SE 019 448). Copies will be available from: ERIC Document Reproduction Service, P.O. Box 190, Arlington, Virginia 22210.

GENERAL SESSION

VALUES, ETHICS, ATTITUDES AND THE ECONOMIST

George R. Armstrong

Professor and Chairman, Department of Managerial and Social Sciences, State University of New York College of Environmental Science and Forestry, Syracuse, New York 13210

We all know what economists do. They are the ones who know how to cure inflation; except, of course, for those who have acted as Presidential advisors. True, even the others argue a lot about which cures to use. In fact, it has been said that if we were to place all economists end to end, they would never reach a conclusion. So, if you don't agree with what I am going to say, you are acting just like an economist.

One point I would really like to make today is that economists are not as centrally concerned with dollars and the market place as you might think; that ethics, attitudes, religion and nonmarket values play a strong role in their work and that there is a powerful interplay among these concepts.

First of all, what are economists concerned about? How do we define their field? They are interested in describing and analyzing the systems by which scarce resources are utilized to meet men's wants. So they are concerned first with the *goals* of individuals and societies, second with the *resources* available for meeting them, and third with the complicated *processes* by which the resources can be manipulated to approach these goals.

Well, you might say, it is still not clear. Isn't an automotive engineer concerned with the same things? Doesn't he take available resources (stocks of air, water, oil, manpower, capital, electricity) and contrive processes by which they may be combined and converted to meet his primary goal which is the creation of driving power? What makes the economist unique?

The answer is the latter's preoccupation with the means of selecting among alternative ways of doing the job. In fact, that is why economics is so often referred to as the science of choice. Its objective is to help develop the rules by which rational choices can be made among alternative courses of action in the face of different value systems.

Let us consider first the *context* within which choices are made. Each of us has a set of wants which he or she wishes to satisfy. We are surrounded by resources (these should be considered very broadly, to include not only natural resources but also man resources such as labor, good will and prestige). These are available in varying amounts, at varying locations and are variously owned. We can avail ourselves of these resources and recombine them within limits set by the social and economic milieu and by attainable levels of technology. The game of life is to acquire selected resources and to combine them in such a way as to maximise satisfactions.

Next, consider the *process* by which choices are made. One who is faced with alternative ways of achieving satisfaction can maximize it by assessing both the cost of each possible alternative and the prospective returns or payoffs, and selecting that alternative which promises the greatest net return.

There's a typical economist, you may say, talking about dollars again and postulating some unemotional, economic man who is nothing but a walking credit-debit ledger. Not at all! The choice may be between joining the "Save the Redwoods League" or "Planned Parenthood." Money may be of small moment. Emotions may run deep on the issues involved. But the choice *will* be made, and the economist is simply considering how.

With this elementary picture in mind, let us consider some of the important forces at work at each step of the process.

The Nature of Wants and Goals

Every year I ask my classes what they want out of life—what they feel is good and desirable both for themselves and for others. The list is always about the same. Material well being above the subsistence level is clearly an objective. They also want stability and security. Their lives and possessions and achievements should be safe and unthreatened. And while most accept the idea of change to a greater or lesser degree, there seems to be comfort in knowing that it won't be too rapid or shifting radically in direction. They want equality in the sense of equal opportunity. I am reminded of our State University motto . . . "Let each become all that he is capable of being." And they want justice or equity. That is, they want due recognition for the contributions they indeed do make. They want freedom of thought but accept limited, carefully conceived constraints on their actions. And in recent years they have invariably added to the list the needs for a close and cordial relationship with others.

Although it is important for the economist to know what wants we have, he has very little to do with how we determine what they are, their intensity, and how strongly they are directed to the self or to others. He takes them as given. By contrast, it is precisely at this point that religion exerts a most powerful influence, one which can strengthen or even annihilate an economy. Picture the repercussive effects on our capitalistic, production-oriented economy if everyone suddenly adopted a religion stressing the attainment of heaven in the next world, extreme frugality and asceticism. Such a religion could fit well the needs of a poor or overly populated society, or one suffering from oppression. But here it could utterly demoralize production and consumption and positively wreck the growth curve.

By contrast, a worldly religion, stressing the union of God in man, and emphasizing the need for perfection and satisfaction in this world, would be encouraging to capital accumulation and growth. And if its emphasis were on work, a vocation, action as opposed to meditation, and on temperance and simplicity in life, it could provide for both production and investment. Kenneth Boulding has also pointed out that innovation in religion has often preceded and paved the way for innovation in economic life. He reminds us of the flowering of Arab civilization after the rise of Mohammed. The commercial revolution in England, Holland and Germany which came with the Lutheran, Reformed and Episcopal church movements. The industrial revolution of the 18th and 19th centuries influenced by the Quaker and Methodist inputs. Thus, religion also seems to generate appreciation for and acceptance of change, and as such becomes a powerful tool for meeting a specific set of goals.

The Nature of the Decisionmaking Context

Because we are born into it, it is easy to overlook or to take for granted the constraining influences of our present social system and our technology. But for a moment let's take the broader view. We are members of a highly organized exchange economy. Another way for the individual or the

group to garner resources and achieve their ends is to be wholly aggressive. Swoop down on the other fellow and take his resources away from him. Concentrate on consumption—threaten—take! For centuries this was the predominant technique. The Sumerians, Egyptians, Romans knew it well. As a way of life, it satisfied some deep wants and was a strong cohesive influence, at least for the winners, and particularly in the short run. But little by little, it has become clear that aggression begets aggression. "You take from me and I will get even." Sooner or later everyone loses. The net returns tend too often to be negative. So when Mr. Nixon talks of peace we all nod assent. No one disagrees.

A second, opposite approach is to be wholly loving, altruistic and self-sacrificing. This approach emphasizes production and giving. This system, too, has provided motivation and satisfaction of some wants, but man's noblest attempts at perpetuating a utopia have failed, probably because they did not realize his own frailties—the satisfactions which he derives from aggression and consumption, and probably, too, because of his inability to maintain a constant, loving image without reinforcement.

A third option is what we have today. An exchange system which recognizes the reality of the twin foundation stones of Freudian psychology and seeks a balance between our aggressive and loving tendencies. Thus we are not takers alone, or givers alone, but givers and takers both. And in the process, if we follow Freudian thinking, we improve our position because a lot of aggressive energy can be channeled into productive rather than destructive enterprise.

Such a system is potentially highly integrative. There is a strong motivation to produce as well as to consume. The net returns tend to be positive. Societies find it easy to endorse, whether they are communist, socialist, or capitalist. The prime differences seem to lie in the degree to which the interest of the individual is said to be balanced against the interests of others.

But this exchange system, like the foregoing, cannot exist in its pure form. The institutions developed to facilitate exchange (banking, transportation, factories, etc.) must on the one hand have the protection of coercive institutions like the military and the law to restrain aggression, and on the other the support and guiding influence of the ethical institutions like the church, schools, and the family to undergird and facilitate exchange through emphasis on honesty, integrity, charity and on the interests of the group as opposed to the self.

Our thriving trade in commodities and the highly complex institutional arrangement we have developed for facilitating exchange requires a third form of support. It comes from another system, which we can call the knowledge system, and which embraces all technological and sociological thought.

After all, exchange represents the implementation of decisions. But the choices must be based on analysis of the alternatives and the world does not serve them up in some convenient array. Man has had to ferret them out, painstakingly. Thus, the history of science is a story of efforts to expand alternatives.

What do we need to know? From the technical point of view we need:

1. awareness of the structure of ecological systems and knowledge of the characteristics of their elements.
2. knowledge and understanding of how these elements interact.
3. appreciation of the forces for change within the system and their several sources.
4. the ability to manipulate and control these characteristics, relationships and forces to meet desired ends.

From the social point of view we need:

5. knowledge of man (particularly his differing aims, goals and values) and of his institutions.
6. how men interact.
7. appreciation of the forces for change within social systems and whence they derive.
8. the ability to guide human behavior.

And, finally, we need:

9. an integrated view of the interplay of these interlocking systems as a base for decisionmaking.

But however much or little we know at present, this much we can say; that our economy derives much of its present strength and vigor from the broad array of alternatives which current *knowledge* makes us aware of, from the opportunity to act which the present *technology* makes possible, and from the ingenious institutional structures which combine the *wisdom* of centuries of trial and error.

Let us consider next the effects of attitude on economic development. And we will take as a case in point the kinds of attitudes which are currently shaping, or perhaps I should say shaking, today's exchange economy.

Not long ago, we began to get ready to send men to the moon. We designed rockets to push them and little space capsules for them to ride in. We realized that those cramped quarters would have to be completely self-contained, closed systems if men were to survive in them for any length of time, and we began to think really seriously about waste products and recycling and consumption rates and the like.

When we got them up there and they looked back, what we already know was pounded home with great dramatic force. Tiny earth was no more than another space capsule. It, too, except for solar energy inputs, was essentially a closed system.

America for decades has thought of herself in another sense. Her's had been a frontier economy. Should local resources be depleted, it was necessary only to move along to more fruitful areas. Now the isolated evidences of pollution here, depletion there, a vanishing species somewhere else, began to fall together into what has been referred to as a "felt difficulty." We began to see ourselves in a new light. Where high levels of productive, consumption and growth had previously been a source of great pride, production now began to be suspect because it seemed wasteful of scarce resources. Consumption began to be suspect, too, because it generated wastes which polluted other resources and which could not be reconverted into useful materials. And growth became suspect because it spelled more production and more consumption from an apparently deteriorating resource base. Thus, the tendency was to apply spaceship thinking to our economy and to turn from growth to maintenance as a guiding philosophy.

Of course, the growth goal is still strongly entrenched in our society. But the concept of approaching scarcity and deprivation has been tossed into the pool and once again the ripples of anxiety are beating at the institutional bastions.

With respect to many of our concerns, we are not dealing in certainties. We surmise, but just can't say with assurance how close to the bottom of the barrel we are for some resources. It may be a matter of time, but we don't know how much time, or what technological offsets or substitutes may be developed. We know very little about the true range of interconnections between any one species in the ecology and the others.

But people are acting as if time is short. The population rate of the Nation is dropping off. The public outcry is to preserve a lengthening list of endangered species, to husband our remaining resources, to reduce pollution, recycle wastes. It has become an age of environmental impact statements, pollution control laws and public preserves. Some of these overt actions are tending to retard economic growth; others like the trend to put private lands back into public lands, demonstrate a lack of confidence in private stewardship. Government is growing faster than business. Consumers are being asked to carry a heavier burden as pollution abatement, waste reduction and production efficiency costs are passed on to them. To the extent that hastily conceived remedial measures fall unequally on competing industries, there are probably significant new competitive tensions and realignments. Above all, there is new attention to the interconnectedness of things. Those who take action are being asked in greater numbers and with greater insistence to examine more closely how far the effects of their actions extend through the ecology, to determine what the dimensions of these effects may be, and to reconsider who should bear the costs. As a result, we can expect the action decisions of the future to be based on a broader and much more complete perception of the environment than we enjoyed a short time ago.

So, in retrospect, the emergence of a new *attitude* toward resource scarcity is already exerting profound influence on the economy and on social decisionmaking.

The Nature of Value

A critical step in the decision process lies in determining the "goodness" of one alternative compared to another. On the face of it, it seems simple enough. Just identify the costs of an action and the returns which accrue from it, and the net result can be compared with those received by following other courses of action. But several demons lie in wait for the unsuspecting decisionmaker.

For one thing, as we noted earlier, it is hard to perceive all the repercussions of an action. We know that implementation of a choice is like throwing a stone into a pool. It starts a succession of changes which extend throughout the ecology. But sometimes the interrelations are obscure. We are unlikely to notice, for example, what happens purely because of temperature changes in polluted streams. And sometimes the effects extend over long periods of time. How different would be two analyses of the social benefits of atomic power if one were made six months after the attack on Hiroshima and the other five years from now. Evaluation over long time periods ushers in additional problems. How do we reach agreement on forecasts of future effects? And even if we do agree, what discount rates shall we use? And how should society's rate compare with that of the individual?

Even for an action having a single effect, right now, there are important questions to answer. What measures of value are to be used. Money has been a widely used medium for exchange in our market economy. But how do we measure the value of a day in the country, the last whooping crane, or of a swamp on the edge of town? Economists have experimented with nonmonetary measures like "utils" but the perennial problem with a ranking system is inability to establish the intervals between ranks. The tendency has been to fall back on money as a measure, simply because it is in such widespread use. Devices which have been used to establish the value of nonmarket goods include: *opportunity cost* or the dollar value which is foregone by not using the resource as a commodity (e.g., the timber value of a forest which is set aside for recreation, the commercial site value of a swamp set aside for wildlife.); *stated willingness to pay* which involves development of a realistic demand curve through population sampling; *shadow pricing* which depends on the judgments of experienced public decisionmakers to set the level of value in terms of other resources.

So it may be fair to say that the economist does concentrate on money, but probably also we should admit that it is more for convenience than because he believes that money is our only object in life. The concepts of opportunity cost and stated willingness to pay are rough measures at best, but nevertheless their continued use can tend to generate more precise exchange values for what are today nonmarket goods.

There are two other issues that serve to complicate the identification of value. A famous economist once postulated three alternatives. One offered to make the decisionmaker a little better off and everybody else a little better off. The second offered to make the decisionmaker a little worse off and everybody else about as well off as they had been before. The third would make the decision-maker a little worse off and everyone else a lot worse off. His point was that any of the three might be chosen depending on whether the decisionmaker was altruistic, self-centered or malevolent. So attitudes and ethics seem to have much to do with values as well as goals.

A last point to make about the evaluation of alternatives is that many of the outcomes are uncertain. As a consequence, future flows of costs and returns are simply bold estimates based on supposition. Attitude again enters the picture; so, too, does knowledge of past performance.

It is time now to draw some conclusions, if we can, from these observations about the decision process, many of which have been stated elsewhere, particularly by the noted economist Kenneth Boulding.

Conservationists like to use the bog as an illustration of the gradual succession of natural events leading to a series of new environments and new species combinations. In a much grander sense, the world is changing in that same way. It is not quite right to say that our ecology is changing around us. Man does not look down on the ecology from above. He is a part of it, and so are his institutions. His banks and automobiles and churches may be looked upon as species, just as susceptible to evolutionary decline as the whooping crane. And it would seem that they deserve just as much care and understanding as we are prone to give the latter.

Man's ability to choose is central to the trend of his development. Yet the very mechanism of choice brings into play such tenuous things as assumptions about the future, about what is right or wrong, true or false, urgent or postponable.

The institutions we have created to support and clarify these concepts are forced to mutate as the environment changes around them. Since they are all part of a seamless web, no one of them can be considered separate from the others. To consider the state of the economy is to consider the state of religion, the law, the school, the family and so on.

Current concerns with scarcity and pressures to modify production, consumption and growth create tensions which reach out to reform the church, our educational systems, our laws and governmental structure. We have to be sensitive about the impact of these pressures and react to them early. If we sense a mounting pressure for maintenance as opposed to growth, or for an "other-centered" rather than a "self-centered" approach to social interchange we must consider and react appropriately to these changes in trajectory in order to meet the goal of stability while allowing for change.

The specialist will be well advised to look more widely about him and be responsive to the interplay not only between man and nature but also among man's social creations. The unifying thread is choice, and all disciplines, all institutions can rally under the one banner-toward creation of a choice system which will bring man closer to his true potential.

A SYMPOSIUM
RELIGION IN AMERICA—
TOWARDS AN ENVIRONMENTAL ETHIC

Discussants: DR. JAMES C. LOGAN, *Professor of Systematic Theology*, Wesley Theological Seminary, 4400 Massachusetts Avenue, N.W., Washington, D.C. 20016

REV. WILLIAM A. ARMANI, *Chaplin*, Veterans Administration Hospital, Syracuse, New York 13210

DR. RICHARD J. McNEIL, *Associate Professor of Natural Resources*, NYS College of Agriculture and Life Sciences, Cornell University, Fernow Hall, Ithaca, New York 14850

A PROTESTANT PERSPECTIVE

James C. Logan

In the wake of the environmental crisis a number of commentators have followed the lead on Lynn White in crediting the problem to a fundamental religious perspective of western Christians. White has argued that the western Christian perspective has been so narrowly limited to the God-man relationship that respect for the rights of the natural order have been minimized or plainly neglected. Western Calvinistic Protestants developed and lived out the so-called "Protestant work ethic." It was chiefly Protestants who pushed the Indian from the land and occupied the North American continent. Protestants with ax in one hand and a Bible in the other forged their way into the West. In fact, the picture is so clear that one can question if Protestants have any right to say anything in the present situation. Understandably some persons in quest for an environmental ethic have suggested that we jettison this tradition altogether and look forward toward the East for a more suitable religious perspective.

While I am in sympathy with those who look toward to East, I have serious doubts about the possibility of translating the Eastern traditions into a highly technological society and one which lives consciously or unconsciously on basic assumptions from the Judeo-Christian tradition. The re-appropriation of a lost tradition may be more radical and salutary than the importation of a new tradition. At least, that is what I propose.

The Judeo-Christian scriptures are not as man-centered and man-preoccupied as the tradition has tended to impute. In contrast to the theo-anthropocentric interpretation of faith, one can point to other equally prominent and ecologically relevant dimensions of faith.

(1) Humans are an inescapable part of the web of life. Despite the unique status of the human species, humans are as much a part of nature as rocks and trees and other animals. The Hebrews understood this when they refused to set man off against his environment. To be sure, they spoke of dominion over nature, but at the same time they understood the environment to be an extension of the human. A dualism between the two was impossible to contemplate. History and nature were not two arenas but one, which was called "creation," and in which the divine activity took place.

(2) The natural world is not static but an organism constantly in the process of becoming. Creation is not a once-and-for-all event of the past, but a continuous on-going process. Certainly the tradition has been guilty in the past of the sin which Alfred North Whitehead labeled *the fallacy of misplaced concreteness*. We have not always understood and appreciated the dynamic quality of the natural world. That such a fallacy should be continued is ecologically suicidal, and, I believe, theologically irresponsible.

(3) While the natural world is not divine, it is nevertheless good. Even in the biblical priestly narrative, with its talk of subduing and having dominion, there is material for a very different view of nature. For it is here that we are told that when the land and seas had been created, "God saw that it was good" (1:10). Five times before there was a man, as well as once afterward, the ancient writer represents God as pronouncing his handiwork to be good. Albert Schweitzer's widely known "reverence for life" has good biblical ground here—as well as elsewhere. But we can and must go further. We need to learn, like Jonathan Edwards, to have "reverence for being"—the being of sun and moon, of rocks and fields and oceans, as well as for living things.

(4) The concern for the value of nature is one piece with the concern for the value of human beings. A holistic perspective, which I deem essential for a basis for a new environmental ethic, demands justice for the whole created order. To cry in the ghettos of poverty that we need to learn to live on less and enjoy it more is to ignore with callousness the plight of our brothers and sisters. To call for a reduction in the rate of the gross national product without calculating the cost to those on the short end of the economic stick can receive no justification in the Judeo-Christian tradition. An environmental ethic must be an ethic for the whole of life, and this raises quite clearly the issue of economic justice and the redistribution of wealth. Here there can be no question that such a concern is deeply rooted in the Hebrew prophets of the eighth century.

In short, I believe that the Judeo-Christian tradition has gone through reconceptualization repeatedly in the past, and it is now due for another one. I believe that an ecological vision can help us to perceive spiritual values now latent—a sense of the interdependence of all life, a love of simplicity, the discipline of restraint, and reverence toward our nonhuman as well as human environment.

TOWARD A RELIGIOUS ETHIC

William A. Armani

I will first make a statement which should be obvious and yet because of our culture it perhaps still needs to be made. I am dressed in the garb of a Catholic priest and yet I do not speak in the name of or for the Catholic Church. Neither do I speak for the Christian Church nor for any organized religion. I simply am here to share my own ideas with you as a human being with a great interest in our universe. In considering how I could best convey the idea that I was speaking only for myself and to avoid the usual stereotypes, I thought about appearing here naked but then I might have been mistaken for a streaker and just ignored.

My premise this morning is that man is a rational animal—the only rational animal and because he is he tends to rationalize his behavior, to explain away deficiencies and mistakes, personal and social, by fixing the blame on someone else. This probably requires no more proof than an honest look at ourselves, but even in Scripture the story of Adam and Eve illustrates this fundamental fault of human nature. As the story goes, the first man and the first woman disobeyed the only command given to them by Yahweh. What is their immediate response when confronted with their sin? Adam says, "Eve made me do it" and Eve says, "the devil made me do it." It sounds silly and the story is probably mythical to begin with and yet it sounds a theme that will be replayed through the centuries. Aaron repeats it when he fashions a golden calf and then tells his brother Moses, "the people made me do it." The theme is still being repeated today. Human kind refuses to accept responsibility for its own history or its own destiny. As I read through some of the material which is available in Environmental Ethics and as I examined my own thought on the matter, at first I, too, was tempted to place the blame elsewhere. I wanted to agree with Lynn White that, "Christianity bears a huge burden of guilt for environmental deterioration" and this was due to the Judeo-Christian concept of man as the crowning achievement of God's creation. Placed at the top of nature, man is told to increase and multiply, to fell the earth (incidentally, someone said that this is the only one of God's commandments that mankind has kept) to fill the earth and to have dominion over it. Other writers added to this that Christianity advocated another worldliness and a contempt for this world. These arguments sounded plausible because of my own Christian background, however, other writers noted that non-Christian culture fill into the same excesses toward the environment. They preferred to place the blame on society itself, or institutions or technology. It suddenly dawned on me that here was the same tendency as the one shown by Adam and Eve or Aaron or a thousand other examples: the tendency to blame someone or something else for ones own actions.

I'd like to give you a couple of examples of what I'm referring to: I happen to be a hunter and a couple of years ago while deer hunting I came upon three does dead in the woods not more than 30 feet apart. It was obvious what had happened. Someone had shot them down for target practice and left them to rot. I hung them up and cleaned them out and told a local farmer where they were so the meat at least would be used. Let's examine the motivation of this so-called hunter. What caused him to act irresponsibly? Was it the fault of society, or perhaps the economic system, or maybe even his Christian upbringing? My only repeatable comment is that he acted stupidly, maliciously and selfishly and I blame only him.

Let's take another example: less than a mile from here is Onondaga Lake. Swimming and fishing in it are forbidden by law with good reason. Those who polluted it and continue to pollute it will give any number of reasons why they are not responsible. By now, I think you realize that we should no longer accept that as valid. Nor should we accept the reasoning of the iron company that pours 67 thousand tons of waste into one of the Great Lakes every day. The worker would say, "I'm not responsible, I only work here and I have to feed my family." The manager would say, "Don't blame me, this was going on long before I came." The owner would say, "This business is necessary for the Community." The stockholders say, "It's the American Way." The economist blames it on technology and the theologian says it's all God's fault. I say, "nonsense."

Here is the only religious ethic that I will suggest here today. Perhaps it's time to take a note from a theologian writing from this very University who declared a few years ago that "God is dead." If that means that humans begin to act rationally and responsibly then I espouse that point of view. And if we wish a motto then I like the words of John F. Kennedy who said, "In this world, God's work is our own." And if we wish a conclusion then picture a composite of every human being that has ever lived from the beginning of time until the end of time. This "everyman" is standing atop Mount Everest looking out over the planet Earth. He shouts out, "Who is to blame for all of this?" The answer does not come from outside of him but from inside of him—and the answer is—"I am."

MAKING RELIGION ADAPTIVE

Richard J. McNeil

The Montagnais-Naskapi are an American Indian tribe who live in Labrador. Speck describes a ritual in which these people hold the shoulder blade of a caribou over a fire. The pattern of cracks and burned spots formed by the fire is "read" and interpreted in order to find answers to important questions. Among these questions is the vital one of which direction hunters should go in order to seek game.

Moore argues that this is an example of magic which does indeed produce the results intended. He suggests that the patterns on the charred bones serve as a randomizing device which distributes hunting pressure in ways that tend not to make game animals unduly wary. (An alternative or additional explanation of the practice by other anthropologists is that this practice reduces intragroup conflict by producing a nonblameworthy decisionmaking process.)

In every human society behaviors arise and become modified, gradually evolving as components of complex social systems. These social systems help to regulate behavior and to help each particular culture to be successful. Magic and religion and rituals are among those behaviors which can be, and usually are, adaptive, that is, they help to

ensure the success of living systems.

There are no known societies from which religion has been totally absent and modern states which have attempted to abolish religion have replaced it with parallel beliefs and practices. Bellah describes the development of a "civil religion" in the United States.

Rappaport argues that "anything which is universal to human culture is likely to contribute to human survival" and that when we consider the resources spent in building religious monuments, in fighting holy wars and suppressing heresies, in supporting priestly castes or hierarchie, in sacrifices, we must reach the conclusion that "religion has not merely been important but crucial to human adaptation."

A principal value of religion seems to lie in its function as a homeostatic mechanism, a self-regulatory mechanism which helps a group of organisms to maintain stability in the face of environmental fluctuations.

Religion and other social mechanisms which serve homeostatic functions normally evolve very slowly in response to very gradually changing environmental conditions. Modern technology has introduced a positive feedback mechanism into our world. Technology feeds on technology, with the result that environmental conditions are changing very rapidly. Social systems cannot be modified rapidly enough to keep pace with environmental change. The result is that we find ourselves using social mechanisms which were adaptive under former conditions but which are maladaptive in today's world.

Religion, when it is adaptive, helps a group to cope successfully with its environment. Religion helps to control human behavior directly; through regulation of human behavior relition may help to govern environmental conditions, religion helps to certify the truthfulness of important communications and thereby increases stability; religion is a source of power to an individual leader who otherwise has little coercive strength (and technological sources of power have become available as substitutes for religion, thus diluting the effectiveness of religious power).

Rappaport describes a very elaborate and extended (10 or more years) ritual cycle in the Tsembaga of New Guinea. In this ritual cycle, large numbers of pigs are slaughtered at the cessation of warfare in order to discharge debts to deceased ancestors. Another round of warfare cannot begin until another ritual slaughter of large numbers of pigs, which of course requires years of buildup from a small residual population. When pigs become sufficiently numerous to cause serious damage to gardens and strong complaints from women who must work harder to raise pigs well in those gardens, the men reach a consensus that enough pigs are on hand to repay the ancestor. During the year-long festival which follows, many pigs are slaughtered and shared with guests who become potential allies in subsequent rounds of warfare. The ritual cycle thus operates to help regulate size of pig population, women's work load, intensity and extensiveness of gardens and fallow fields, frequency of warfare, expansion of the territories of more viable human groups at the expense of less viable ones, and transmits resources and information between groups.

The sacred cattle of India, wandering through city streets and countryside, sometimes taken to centers where they are given elaborate care, are often cited as a maladaptive religious strategy in a hungry country. Harris (1966) has demonstrated that the treatment of these cattle is an adaptive component of the Indian social system. These animals contribute milk, power for plowing and transport, dung for domestic cooking fuel (equal to 40 million tons of coal annually), hides (for the world's largest leather industry), beef for millions of non-Hindu Indians.

The Naskapi caribou bone divination, the pig slaughtering rituals of the Tsembaga, and the sacred status of Indian cattle are examples of adaptive elements of religions. But it also appears that many components of the world's major religions are not adaptive under today's environmental conditions.

The biblical injunction to "be fruitful and multiply" (Genesis 1:28) would seem to be maladaptive today. In times when warfare, hunger, accident and disease held human population in check, production of large numbers of offspring was adaptive. Today the same strategy is not only maladaptive to the individual but to the group and to the entire world's human population. The papal prohibition in the Roman Catholic Church against most methods of birth control would appear to be a similarly maladaptive strategy.

The perceived status of man in or above or against nature is being re-examined in Western cultures. As long as man had little technological power and was largely at the mercy of his natural environment, it was logical for him to "have dominion" (Genesis 1.26) over nature, to be separated from and to place himself "above" nature. Today, when we need to remind ourselves constantly of our interdependence with other elements of nature, to see ourselves as governed by the "laws" of nature, perhaps it is a better strategy to redefine our role as one of man in nature.

The ethic of growth and the idea of progress are recent, Western, and increasingly being attacked as maladaptive; substitute or revised ethics are being proposed with increasing frequency.

As our interdependencies obviously have grown global in scale, it is also apparent that we are becoming a world community. We have now the opportunity of drawing upon the "best" (most adaptive) elements from the world's religions and producing a more satisfactory ethic and more suitable behaviors for today's world. At the same time, those of us who came from Western cultures can continue to obtain the values in Judaism and Christianity, but emphasizing certain values which until recently have been neglected.

We can temper our Western goal orientation and urge for activism with an Eastern acceptance and enjoyment of the moment. Either extreme is destructive; a blending of both elements is likely to be satisfying and appropriate.

We can replace our notion of dominion with the alternative of stewardship (which is, according to Sittler, a better translation of the Hebrew word).

Sahlins makes the interesting point that there are two roads to affluence. One is to try to accumulate wealth and possessions. The other is to attain a mental state in which wants are limited and easily met. Sahlins suggests that early hunter-gatherer cultures were not particularly limited in their culture by the need to spend every waking moment scrambling for food and other needs. On the contrary, they had (and similar cultures today have) very large amounts of leisure time and they spent only a few hours each day "at work." They apparently chose the Zen road to affluence, limiting wants rather than expanding possessions.

Leopold expressed better than most the need for an extended ethic. He recognized three stages in the evolution of ethics: personal, social and land ethic. The personal ethic is the relationship between individuals (Thou shalt not kill). A second stage recognizes social obligations which go beyond interpersonal relationships (I must pay taxes; I should do work which is socially beneficial). A third stage, not yet reached, is the relationship between man and the land (I have obligations to care for the soil, to treat animals humanely, to use resources in nonwasteful ways). The land ethic simply enlarges the boundaries of our ethical relationships to include soils, water, minerals, plants, animals—the land.

I would suggest two possible additional extensions of

ethics. First, our concerns must be extended further into future time. We must realize an obligation to future generations of human beings and other organisms. We must ask ourselves what levels of fossil fuels must be left for our grandchildren, in what conditions must we leave strip-mined landscape, how can we discharge our obligations to safely contain radioactive wastes which will be dangerous for thousands of years, should our offspring be saddled with our dumps and waste heaps of indestructible plastics and with pesticide-contaminated air, water and soil?

Second, we must extend our concerns spatially. We can no longer be concerned with local effects of our actions. We must be concerned with human beings, other organisms, and ecosystems around the world. They have rights and we have obligations to them which we can only discharge ethically by being knowledgeable and moral in our behavior.

TRENDS IN OUTDOOR RECREATION

Discussants: DR. GEORGE MOELLER, *Project Leader*, Northeast Forest Experiment Station, U. S. Forest Service, State University of New York College of Environmental Science and Forestry, Syracuse, New York 13210

MR. ROBERT F. GIFT, Northeast Regional Office, Bureau of Outdoor Recreation, U.S. Department of the Interior, 600 Arch Street, Philadelphia, Pennsylvania 19106

FUTURE TRENDS IN RECREATION RESOURCES MANAGEMENT

George H. Moeller

Pick Your Poison

The environmental literature of today abounds with prophecies of great disasters that are about to befall mankind. The only question that seems to remain is which one? Will it be mass starvation and population collapse? Will fixed resources simply run out? Or will our blind faith in technology keep us from organizing the institutions needed to guarantee survival?

Like the hero in a yesteryear Saturday afternoon movie serial, present day prophets of doom picture mankind posed at the brink of disaster. But there is a major difference in the way the plot turns out. In the movie plot, we were confident that our hero would persevere. And as the curtain closed on the final serial installment, the hero and his heroine would serenely walk off into the sunset. In comparison, today's prophets of doom do not leave us with the same confident feeling as when we left the movie theater in years past. The drama they describe is real. They are telling us that the final curtain is about to fall on mankind.

Few have been so bold as to offer solutions to this dilemma. But if we as individuals accept the postulate that nothing *can* be done, that we *cannot change* anything ourselves, and that institutions *cannot* be altered to meet the problem, then these prophesies will become self fulfilling. If we are left with the feeling that there are *no* solutions, then all that remains for each of us is to pick our own poison. Hemlock anyone?

But much can be accomplished in a short time to guarantee a healthy future environment—an environment in which man can live in harmony with nature. We now realize that bads can be the reverse side of goods—that material progress comes at a high price, and that institutions that evolved in a frontier society need to be seriously re-evaluated. We are beginning to take a longer view of things—to focus on the future.

Challenging Management Decisions

One of the most significant challenges facing legislators, resource planners, developers, and managers, is to make decisions that will ensure the continued functioning of natural ecosystems, and at the same time, maintain a healthy and attractive environment. We all have vital roles to play in making these decisions. But as technology invades our fragile ecological systems, we face the dilemma that "...the more we strive to reach the popular science future, the more likely we are to achieve ecological disaster."

Advocates such as Dubos underscore the magnitude of the problem by suggesting that "the colossal inertia in rigidity—if not indifference—of social and academic institutions makes it unlikely that they will develop effective action programs focused on environmental problems. Unfortunately, the information available to make these decisions resembles the all-too-familiar top of the iceberg.

Launch Versus Splashdown Considerations

The decisionmaker faces a task that is at least as complicated as placing a man on the moon. Space scientists had to think through the problem from countdown to pickup, by measuring the forces they had against, the forces they had to overcome. They not only had to determine how to shoot a man into space, but also the more difficult problem—how to get him back! Contingency plans had to be developed—*long before the launch*—to ensure a successful splashdown.

Now consider the launch and recovery problems in recreation resources planning and development. Do we adequately consider re-entry and splashdown problems as carefully as we consider the launch problems?

For example, are we analyzing the total problem when we develop recreation opportunities in a unique wildland environment and then advertise that environment, making it so accessible that it bursts at the seams with crowds, thereby destroying the ecological integrity of the area several years after it is developed? The recovery problem at the end of this *launch* may resemble an overwhelming task of garbage pick-up and ecological rehabilitation. Recovery plans in this case need to include consideration of: a means to sustain resource carrying capacity; a price mechanism to control recreation use and cover the costs necessary to maintain and preserve the natural integrity of the area; and an equitable reservation system to control recreation use.

Campers often sit in their cars for several days waiting to use campgrounds that are already filled to capacity. What is the solution to the problem? Can we continue to build more and more public campgrounds to satisfy an ever increasing demand for camping? Is this a viable *long-run* solution? Past

experience has shown that an increase in camping supply creates an increase in demand, which in turn creates a need for more campgrounds. Funds available for development and a fixed resource base eventually limit such an endless campground building program.

Technology—Friend Or Foe

We must consciously remind ourselves that present decisions alter future decisions and often reduce alternatives. If, for example, we carve out parts of our natural beauty spots to accommodate the most modern types of leisure-time equipment that technology creates, then we will inevitably face the unpredictable people problems, management costs, and ecological damage that result. On the other hand, decisionmakers can push for policies that *require* technology to design facilities, develop commodities, and provide equipment that blends harmoniously with the natural environment.

Through the Looking Glass

What are some future events that are likely to influence today's environmental decisions? Our looking glass to the future is the Delphi Technique. In ancient Greece, when one wanted to know what the future held, he consulted the Oracle of Delphi—today he consults the experts.

In a recent Delphi study we surveyed a panel of 400 experts in the biological sciences, ecology, conservation, and fields related to population dynamics, resources management and environmental technology. We asked these experts to forecast environmental events that they felt are likely to occur over the next 50 years.

The Delphi research technique is a method of combining expert opinion into group consensus. The study proceeded through four rounds of questionnaire mailings. Through each round, data were summarized and returned to panel members. They were given the opportunity to re-evaluate their predictions in light of these summaries.

Natural Resources Management

Most panel members predict an expanding governmental role in natural resources management. By 1980, economic incentives will be offered private landowners who manage for fish and wildlife. These will broaden by 1985 to include tax incentives for providing scenic amenities.

The Federal role in coordinating natural resource planning will expand from establishing the first land, water and air-use plan in 1990, to a national land-use zoning policy in 2000. By 2000, environmental planning will be effectively coordinated between all levels of government and private enterprise. Also by 2000, land-use patterns will stabilize, with land pre-empted for one use being replaced with comparable land. All natural resources, including marine and estuarine areas, will be under intensive management.

Panel members predict a continuing expansion in national and international planning and control of natural resources after 2050. A national per capita land requirement will be established. Growing demands, particularly for recreation, will require that resources be used more intensively. Heating of man-made lakes to allow year around recreation, and public control of shoreline along all navigable water will occur after 2050.

Wildland Recreation Management

Expert opinions reflect an increasingly important role of recreation in influencing wildland management policies. By 1980, restrictions will start on recreational use of wildland areas. Glass containers will be prohibited, and off-road recreational vehicles will be restricted to designated areas. To expand the use of scarce resources, recreation activities will be assigned time-periods for the same area. Computers will be used to advise people on where to go for recreation.

Restrictions on recreation use will be expanded to maintain the quality of recreation experiences. By 1985, limits will be placed on the number of people allowed to use a wilderness or remote recreation area. Maximum noise levels will be established to maintain the quality of recreation experiences and environments. The recreation experience itself will change, with facilities, such as cable TV hookups available at most campgrounds. Restrictive management techniques will be employed to control recreation use patterns. Also by 1985, economic incentives will be made available to private landowners who open their land to public recreation.

Growing recreation demand will require additional restrictions on recreation use of wildland resources by 1990. Public recreation areas will be assigned maximum carrying capacities and use will be kept at or below capacity levels. Use of public recreation facilities will be by reservation only. Maximum recreational boat motor sizes will be set for all public water bodies. Fishermen will pay for the use of salt-water fish resources.

By 2000, wilderness areas will be managed more intensively to maintain the wilderness environment. Permits, used to control all resource-based recreation, will also include certification for certain user groups, such as wilderness users.

Wildland recreation areas of 2000 will be vastly different than those of today. Only recreation vehicles that employ nonpolluting propulsion systems will be allowed in recreation areas. Popular wildland recreation areas will be serviced by rapid transit.

Technology will assist the part manager of 2000, as well as create new management problems. Artificial lighting will extend use of recreation facilities, and remote sensing devices will be used to monitor park use. Waste disposing bacteria, incorporated into recreational equipment, will reduce sanitary disposal problems. Extensive irrigation of arid regions will broaden and enhance recreational opportunities. Technology will also create challenging management problems. For example, experts felt that by 2000, small private submarines will be in common use.

Rather than rely on natural reproduction, the wildlife manager of 2000 will utilize captive rearing to raise endangered species for release into the wild. He will monitor wildlife migrations by satellite. Controls will be placed on hunting, with motorized vehicles excluded from hunting areas during hunting season. But by 2000, the primary use of wildlife resources will change from hunting to non-consumptive uses like photography and observation.

Population—Workforce—Leisure

A growing population with changing attitudes toward leisure will have a major impact on institutional and social structures. By 1985, experts predicted an average 4 day, 34 hour work week. Employers will provide leisure counseling services for their employees. By 1990, data on leisure activities and interests will become a regular part of the U. S. Decennial Population Census. In response to increased travel and changing leisure interests, public schools will operate year round with staggered vacation periods. Most homes will be equipped with video tape systems for entertainment and education.

Panel members predicted that by the year 2000, 500 miles will be a reasonable one-way distance for the average family to travel on a weekend.

Both the structure of leisure and social attitude toward leisure will change substantialty by the year 2000. "Weekends" will be distributed throughout the week, thereby effectively increasing the supply of available recreation facilities. With an average retirement age of 50 years, people will enjoy more total leisure during retirement. In response to this abundant leisure, the role of public schools will expand to provide for the recreation needs of the entire community. Middle income families will vacation in other countries as commonly as they vacation in

the United States today. Panel members also felt that by the year 2000, the work ethic will assume a lesser role in governing society, and leisure will become an acceptable life style rather than a reward for work.

An attempt will be made to control population growth through tax incentives in the year 2000. But panel experts felt that mandatory population control will eventually be necessary.

Panel members agreed that some time after 2050, people will have an average annual 3 months' vacation. They will enter the work force at 25, and live to an average of 100 years of age.

The Clouded Future

We must look to the future with a great deal of uncertainty. Yet, we should realize that a decision made today will change our recreation environments of tomorrow.

Several trends are apparent in these Delphi predictions. Increasing action at all levels of government will be undertaken to meet growing pressures on scarce wildland resources. The use of rational resource planning, brought about through greater environmental understanding, will be coupled with rigid, enforced controls necessitated by the demands of a growing population with more time, more money, and consequently, more demands on our fixed resources.

Decisionmakers must probe the future to estimate the effects of present decisions, and must constantly ask whether the results of their decisions truly solve long-run problems, or whether their decisions are merely short-run solutions to more complex, longer-run problems.

An aspirin may be a short-run solution to a more serious problem. By the same reasoning, we cannot expect crisis decisions to today's environmental and social problems to serve as substitutes for long-range solutions. These require a total understanding of the interactions between man, technology, and his natural environment.

OUTDOOR RECREATION TRENDS AND NATIONAL PLANNING

Robert F. Gift

A trend indicates a general course or drift. This is so true with trends in outdoor recreation. It is an area with which we have yet come to grips or able to really understand. We can make general observations but when we get to specifics we find ourselves in trouble. So many factors affect demand and trends for recreation such as life styles, socio-economic factors, the world situation, the economy, education (that trends appear to change over night). What is it we are talking about? The *it* are people. People are emotional; they have whims; they are complex and products of their environment.

People are the consumers or users of outdoor recreation opportunities—in some cases consuming the resource itself. This leads to increasing control over the number of people using a particular resource. Permits are being required for entry into certain wilderness areas and trail systems. Access to several National Park areas is by bus or jitney with parking on the periphery of the park. Reservation systems for camp sites have been initiated by the park service and several of our states in the Northeast. This provides for greater distribution of people to less known and used sites. The user expends less gas and time as this system eliminates the search for sites.

Outdoor recreation in the United States encompasses a complex of people, resources and institutions. Our recreation system involves a diverse population in a country of vast climatic and physical contrasts, with a multitude of governments and profit and nonprofit organizations having a variety of interests in or responsibilities for recreation. Through increased mobility, more leisure time and greater affluence, new recreation vistas have opened to millions of people who had only limited opportunities to experience them in the past. Popular areas have become crowded often to the point of diminished enjoyment. The traditional recreational management problems have become more complex due to pressures of overuse, and the need to instill an environmental awareness and appreciation in multitudes of new recreationists. Substantial changes are taking place in people's recreation habits and patterns, and in the manner in which they reach their objective to recreate. Many recreation activities have been affected by technological change, because portable equipment and facilities now make instant, movable recreation areas. More people are now taking nonsummer vacations. The public is more aware and receptive to new and unique recreation approaches as seen in legislative actions, voter supported bond issues, activity attendance, equipment sales and many citizen suggestions to recreation agencies.

According to the analysis of the current outdoor recreation scene as derived from the study completed in conjunction with Nationwide Comprehensive Outdoor Recreation Plan, the simple outdoor recreation activities account for the greatest amounts of participation. People go swimming more than they participate in any other outdoor recreation activity. In fact, the 744 million activity days of swimming exceed the participation in the next most popular activity by nearly 250 million activity days. Rounding out the list of the five most popular activities are walking for pleasure, picnicking, driving for pleasure and sight-seeing. These five account for over 51 percent of the participation in all activities.

The majority of participation takes place on weekends resulting in a maldistribution of outdoor recreation demand, and suppliers are plagued with large amounts of excess capacity on week days. Tennis and camping in remote or wilderness areas have the highest percent, respectively, of participation taking place on weekends.

Although the majority of the participation in outdoor recreation takes place on occasions which do not require an overnight stay, a very significant amount does involve getting away from home on vacations and overnight trips. The percent of total participation involving overnight stays range from 70.9 percent for sightseeing and 14.8 percent for outdoor sports. 92.8 percent of vacations and 60.9 percent of overnight recreation trips involve round trip mileages of 400 miles or more. Over one third of day outings involve round trips of 150 miles or more.

It was found that changes in the prices of outdoor recreation activities have little effect upon the quantities demanded by those people participating. This is reflected in the increase in travel despite the price increase of gasoline. Nine months ago gasoline shortages and fears of rationing wiped out the sales of recreational vehicles (RV) almost overnight. Now, even with retail prices up 8 percent to 10 percent, the RV makers say the buyers are back and sales of a few products are reported to be topping 1973 figures by as much as 25 percent. But a new problem has developed in that there are too few RVs to meet the resurgent demand. Because the quantities demanded by participants are unresponsive to changes in the price of activities, many

outdoor recreation facilities may go on a "pay as you go" basis of operation through the use of user fees without significantly reducing the quantities of the activities demanded by participants.

According to the Nationwide Plan, participation in outdoor recreation will grow one-third faster than the United States population between now and 1978. Total participation is expected to increase by approximately 12 percent by 1978, while the U. S. adult population is expected to increase by only 9 percent. The demand will be the greatest in parts of the South and Southwest—Nevada, Texas, Georgia and Florida areas. The simple outdoor recreation activities will continue to account for the greatest amounts of participation. Swimming will again be the activity with the most participation, while the demand for golf and going to outdoor sports events in that order will grow the fastest between now and 1978. The remaining three of the five outdoor recreation activities projected to grow fastest are waterbased and ranked in order are boating, outdoor pool swimming and waterskiing. The economic and resource situation among other factors will make outdoor recreation facility planning increasingly more difficult by 1978. Any indication of what I was saying earlier about changing trends is reflected in the projected shift from "day and short outings" to "vacations and trips"—people traveling greater distances when participating in outdoor recreation. With the energy situation and rising costs such may not be the case. States and local agencies have found people are using local facilities or short outings and when traveling long distances stay longer in one place participating in such activities as hiking, bicycling, nature walks and swimming.

When we become more specific as to activities we find trends vary from region to region and state to state. From the State Comprehensive Outdoor Recreation Plans, for example, take two states at the extremes of our region—New York and Virginia. Of 24 activities, the most popular in Virginia is bicycling, which accounted for 24 percent of the total activity days. Most of this is done close to home, on city streets or sidewalks, and by children or youths but adult riding away from home is gaining in popularity and is leading to organized demands for specially built or designated bicycle trails. Next is the playing of outdoor games amounting to 20 percent. Hiking and walking account for nearly 12 percent swimming in pools 7 percent, at the beach another 6 percent. Activities expecting to grow faster than others are camping, bicycling, hiking or walking and the use of off-road vehicles—70 percent or more in the next 15 years. In New York, swimming commands the largest following with over half the population swimming at least once during the year. The two fastest growing sports are skiing and golfing, skiing 47.8 percent and golfing 45.4 percent.

Where do we stand? Since the Land and Water Conservation Fund was created, over $1.7 billion have been made available to acquire lands for preservation, parks or recreation purposes. Over 2 million acres of land have been acquired through this program. State and local governments have matched about $1 billion of Federal funds to make recreation resources available to their people. In developing a nationwide outdoor recreation plan, we are looking at a triangular relationship of people-resources-and institutions. The plan is to serve as a framework for Federal agencies, also as a guide for non-Federal interests. We can expect the Federal commitment to outdoor recreation activities will continue to be funded at about the $1 billion level; expect the Federal Government to propose fewer national parks, national recreation areas, national seashores and similar areas than during the last ten years; the emphasis for providing recreation resources being shifted from the Federal Government to state and local governments and private interests; the "Legacy of Parks" program accelerated so that under utilized and surplus properties are made available to state and local governments, about 55 percent of our funds to go to urban areas, an increase of about 7 percent; better utilization and management of public land for recreation. We can look to greater efforts toward public participation and involvement.

With situations changing so rapidly, specific trends and forecasts are out of date in a short period of time and may not be valid. Some suggestions for further study are: an opportunity in the system to provide feedback; research (1) to determine the type and quantity of information needed to maximize enjoyment of a given recreation experience, (2) to assess the psychological impact of environmental education and nature appreciation on users, their value of the experience, (3) to analyze the response of various segments of the population to recreation ruler, guidelines and instructions, and (4) to analyze users needs for information.

GAMING AND SIMULATION

DR. RICHARD W. PRESNELL, *Assistant Professor*, University of Wisconsin-Green Bay, Green Bay, Wisconsin 54302

MRS. MARTHA E. MUNZER, 517 Munro Avenue, Mamaroneck, New York 10543

Richard W. Presnell

It has been discovered by many authors that there is no significant difference detected in terms of the growth of the children who are taught by various institutional methods. I agree with these authors that there is nothing necessarily automatically magical about using a lot of games, simulations, and things in the classroom. However, I think the authors would also admit that the conventional instruction with which the game and simulation were compared was not as conventional as most of the instruction going on in school—that the conventional instruction was actually excellent instruction, using a lot of visual materials, a lot of activities. And so the comparison, I think they would be willing to admit, probably was not good in terms of looking at what happens in traditional classrooms. A lot of learning took place under all of these things. So maybe what we're getting down to is the fact that lots of kids learn things differently and maybe what we need in education is a wide variety of approaches.

I am very much in favor of gaming and simulation because I think they can lead to exciting participation education, something that I'm still somewhat shocked to find missing in many of the classrooms, and I do spend a lot of time in elementary and secondary classrooms. My bias is though, that if you can get the children into the real life situation, then you are even one step ahead of simulation.

Of the many games that exist that schools can buy for

teachers, in my experience, the best games are the ones that are designed by the kids themselves. Games that center on things that interest them, games that center on environmental issues within their own locality, or one that interest them out of their locality. What I'm saying is, from my experience, the most important part of the use of a simulation and gaming is in the actual development of the game. Those 60 or so children who participated in the development of the game that you have in front of you are the ones who really learned—more than the many hundreds of kids who have used it since. When I use this with children and teachers, the first thing I ask them to do is to consider altering the game, because I think when the kids reach the point where they are able to see the fallacies in the game, they're able to see that it could be changed, then they could reach the point that they're really starting to learn, and some people have taken me up on it.

This game is a simulation in which kids play the roles of six different resident wildlife common to most of our northern tier of states—the great-horned owl, meadow mole, cottontail rabbit, deer mouse, red-tailed fox, and the ring-necked pheasant. Each child plays with different rules. It's a little complicated. You have a wintertime situation with more night than day, and some of the animals are nocturnal and some are diurnal, some are crepuscular. Certain habitats on the gameboard can provide food, some can provide food and cover, some can provide cover only, and some are hazardous. With play and revising over again, you can come up with a game that is reasonably random. I can't predict who's going to win. The predators, as in nature, have very small populations. Two foxes, two owls—nocturnal predators, four cottontail rabbits and four pheasants, eight moles and eight deer mice. Rules are on the cards. Some of the variables you can bring in by means of cards, weather (snow, blizzard), parasites (lice, mites, fleas, ticks). The rules are not extremely easy. The notion behind it was to teach kids some ecological concepts, some of which are not that simple and cut and dry.

Editor's Note:

Mrs. Munzer introduced the session by reviewing several simulations and games that deal with environmental topics and concepts.

MEASUREMENT OF ENVIRONMENTAL ATTITUDES: LESSONS LEARNED

DR. PAUL R. MEHNE, Educational Communications Section, State University of New York College of Environmental Science and Forestry, Syracuse, New York 13210

DR. CARY J. GOULARD, College of Arts and Sciences, University of Northern Colorado, Greely, Colorado 80639

It is clear that some mediating mechanisms function in the expression of overt behavior—and that it is important for us to identify means of significantly altering such behavior to establish an environmentally conscious public. Whether we label such mechanisms attitudes, values, ethics, or complex covert behavioral repertoires, we will not know which environmental activities affect systematic changes in behavior without measuring changes in subjects' covert behavioral repertoires.

It was the purpose of this session to describe procedures commonly used in measuring attitudes (i.e. surveys, questionnaires, anecdotal records, and attitude scaling techniques), and to provide annotated bibliographies for each instrument. This discussion emphasized the practical problems of logistics, selecting, constructing, and evaluating particular procedures, rather than theoretical issues. Additionally, guidelines for designing locally produced environmental public service announcements were provided.

Copies of the documents utilized in this session [*Attitude Measurement Techniques, A Bibliography of Attitude Measurement Literature*, and *Environmental Public Service Announcement Survey*] are available from Dr. Paul R. Mehne at the address shown above.

STATE ENVIRONMENTAL EDUCATION PLANS AND LEGISLATION

MS. NANCY J. AYERS, *Environmental Education Consultant and Director*, Susquehanna Environmental Education Association, 616 Pheasant Lane, Endwell, New York 13760

MR. DON ALBRECHT, *Staff Writer*, Environmental Education Report, 1621 Connecticut Avenue, N.W., Washington, D.C. 20009

STATE OF THE STATES: THE BEST LAID PLANS . . .

Don Albrecht

"Plans don't work; people do." This succinct concept of reality was formulated by Dwight Rettie, Director of the National Recreation and Parks Association. It applies nowhere more aptly than in the realm of state environmental education planning.

Nearly half of the 29 states* which have some type of planning document have developed them with the aid of the 1970 Environmental Education Act funds. During FY 1972, the last and biggest year for Federal Act support of state EE planning, the government spent over $400,000. The

Department of Technology and Environmental Education (then OEE) administered an average of $35,000 to each of a dozen states, three of which were funded the year before. EE Act funds for state planning abruptly halted after FY 1972.

These amounts do not include in-kind contributions by sponsoring agencies, a significant but incalculable addition to the total dollar input. Also, Federal funds other than those from DTEE helped a small number of planning efforts. Many states developed their plans using only internal resources, i.e. they were written by state agency personnel, unpaid consultants or advisory bodies.

Turning this apparently expensive commitment into active, coordinated state programs is the toughest and most critical aspect of planning. And it is important to emphasize that implementation is a part of the total planning process. A state EE plan defines the framework, provides the guidelines and describes the processes for coordinating and evaluating communication, education and information programs. This definition implies the integral part implementation must play in the total effort. To put it another way, no plan can be considered successful until there is tangible evidence that it has helped people become more active in EE—until 6th graders, summer campers, *Readers' Digest* readers, house-husbands and legislators begin working toward the state's coordinated EE goals.

Common EE Elements

There are some elements of environmental education which are common to most state plans. One is the emphasis on process over content. Content, which is comprised of the data, information and results of planning, is seen as necessary but out of place in state plans. Planning stresses the methods, procedures and means to accomplish EE goals.

The terms formal and nonformal education are used in state plans to communicate the idea that EE occurs not only in formal academic institutions, but in experiences outside that relatively limited realm. Magazines, TV, parental example, etc., all contribute to what people learn about their interaction with the environment. Hence, state plans generally recognize and deal with both components of our education experiences.

Another common element regards the approach to developing a statewide plan. Two options are open to the planners; a traditional tendency is to have experts direct the planning process—an approach sometimes perceived as an elitist attempt to override the view of citizens. This contrasts with the participative, or grassroots, approach which seeks to actively involve a broad representation of the state's entire population. EE planners try to follow this path, using the abilities of large task forces and advisory committees who pursue the needs and ideas of the state's citizenry. A clash between these two approaches resulted in what appears to be two state plans for Alabama (see EE REPORT, August, 1974, p. 7).

How Plans Are Developed

Realistically, however, it is true that most planning involves a synthesis or combination of the expert and participative approaches. Michigan's plan, viewed by many national planners to be an exemplary project, used not only a 19-member "broad-based task force" appointed by the Governor, but also a professional planning coordinator, 61 informal (unpaid) consultants and 600 questionnaires, 4 regional meetings and a state conference. Both expert and citizen views supplied input.

The total planning process essentially encompass four major phases: 1) Planning—the preparation of a pragmatic approach to efficiently achieve state EE goals; 2) Communication—creating, through the awareness offered by the planning document, a momentum and commitment toward the adoption of the plan; 3) Implementation—the setting in motion of strategies and specific activities designed to attain the goals and objectives of the plan; and 4) Refinement—planning improvement and support through continuous evaluation and modification.

The first step is one of the toughest. Under whose auspices should a planning committee be housed? Here, the national picture is mixed; most often, the appointment of a committee is a joint effort among active citizen groups and individuals within state government. The state department of education is often seen as the most obvious place to motivate the state to provide funds, materials and office space for a planning program. Indeed, the majority of plans were prepared by advisory committees to state education agencies. Both California and Florida have had outstanding successes working within their education agencies—Florida had its official EE standing elevated from a consultant position to full bureau status over a year ago. California's plan was focused primarily on formal education which helped win for it increased state support.

However, a few states sought to develop plans under a broader scope than is provided by the state department of education. Instances where citizens have sought to create their own plan under leadership exterior to the education agency are unique according to each state's own situation. Rhode Island's newly proposed plan, for instance, was prepared by Ecology Action for Rhode Island who sponsored the effort involvement by the R. I. State Department of Education is inherent in the report since an informal representative of the Department helped to draft the document. In addition, approval and formal support is currently being sought from that state's education agency.

Plans in North Carolina and Michigan were developed using Governor-appointed task forces made up of representatives from different geographical and occupational areas of the state. The idea was to "house" the committee under an agency which would be seen to represent the entire state's population, not just teachers. Hawaii's planning effort was initiated by a volunteer group of citizens who sought, and received, a FY 1972 grant from DTEE to complete its plan. And in response to their state department of education's plan, the Alabama Environmental Quality Association developed a strong grassroots plan, reflecting the interests of Alabamans regarding EE without working at cross-purposes to the department plan.

State assessment involves the identification of problems, needs and resources. To do this, everything from questionnaires to regional meetings to asking consultants have been employed. This is one of many areas requiring monetary support in order to effectively collect this important information. It is also an area which, according to Johnathan Wert, a student of EE planning and TVA's EE Specialist, hasn't been done very well. "Needs assessments," he says simply, "just weren't very good. They failed to secure the necessary commitments along the way," a tactic he's convinced is vital to implementation.

The Planning Document

Plan content is becoming fairly standard—although individual states do not necessarily call them by the same terms, common areas exist. Each plan usually interprets within the state's own framework what are the characteristics of an EE plan, how the plan was developed, how the state defines EE and the problems and needs specific to EE within the state. Another portion of the document outlines the overall goals and objectives of EE

**Alabama, Alaska, California, Colorado, Connecticut, Delaware, Florida, Illinois, Iowa, Hawaii, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, Washington, West Virginia, Wisconsin.*

followed by recommendations, strategies and a suggested evaluation procedure. Appendices may include implementation timelines, budget requests, proposed legislation, EE resources and similar, detailed information. Minnesota's plan included a copy of draft EE legislation for example, while the Texas plan includes a specific implementation schedule.

EE needs break down into about five common program categories: communications, training, curriculum, community projects and materials. These major areas correspond to state EE priorities out of which are determined the all-important recommendations listed for each of several "target groups". Target groups are identifiable groups of individuals or organizations to which specific suggestions are pointed; again, these vary according to each state.

Michigan and North Carolina addresses these groups: agriculture, business and industry, citizen groups, elementary and secondary schools, government, higher education, individual citizens, labor, mass communications, professional and trade associations, religious and youth groups. Some states combine these areas; others break down the list further.

An overall organizational structure is also usually recommended in the plan to ensure coordination of diverse programs. Three general components embody this aspect of the plan: a state EE council, a state office or center and in-state regional centers. Only a handful of states (Connecticut, Florida, Minnesota, New Jersey and Wisconsin) have functioning councils. These should, however, be distinguished from advisory councils; the latter have less power to influence policy, and hence, to influence the flow of state monies into EE programs. Most planning committees, task forces or councils were purely advisory and thus could not make blanket policy statements until officially approved by appropriate state agencies. Councils generally include members who represent a cross-section of interests, from bureaucrats to businessmen, naturalists to teachers.

Regional centers, recommended in only a few states, are area divisions within the state which have their own office and personnel assigned the task of further localized implementation activities. These regions, usually numbering between 7 and 18 in the larger states, work directly with target groups in the area. They also report to the state council, keeping close communication ties with other state regions and their activities. Minnesota is the first state to obtain funds to hire a regional coordinator who is located in the state's northeastern Arrowhead region. Nearly all of Minnesota's 13 regions have EE programs underway.

Implementation

Implementation (a term as overwhelming as the task it defines) is by far the most critical aspect of planning. Unfortunately, too much rhetoric and too little action characterizes it. Thus, while the *need* for implementation is acknowledged, the *responsibility* for it is rarely pursued or accepted.

"Implementation rests first on the willingness of key public and private organizations and governmental agencies to assume and to exercise responsibility for carrying out the various aspects of the plan. Second, the operating funds must be available to those assuming this responsibility". Richard Rocchio, head of a nationally-funded demonstration project to report on EE planning in 1973, concluded that these two generalizations are the real key to the ultimate successes of state planning.

One of the constraints placed on state education departments, the most obvious choice for implementation responsibility, is the view that they are already over-committed. Many special areas of learning are required by law to be taught in public schools, giving rise to the perception that EE is merely another special interest needing attention. Rudolf Schafer, CA's Dept. of Ed. EE Specialist and head of the Western Regional EE Council, points out that "about $15-20 million is spent on driver education each year, but only about one quarter million dollars on EE."

Often there is a lack of understanding regarding EE's concepts among teachers, administrators and the public. Thus, when it comes to budgetary requests, the consequence is often a lack of recognition to the potential EE brings to all education.

Other commitments become necessary. By "approving" the plan, the governor or superintendent of instruction, for example, gives impetus to the naming of a state EE council. Jonathan Wert sees this as one of the keys to implementation, citing Wisconsin and Florida as exemplary programs since each has at least one person directing EE plan activities. State discretionary funds could be allocated to fund a center. The governor could then help in the pursuit of more permanent state funding from the legislature. Commitments from state legislators also help procure state EE legislation and appropriations. Minnesota's experience provides a case study of this point. There a state EE law was passed because of the many efforts of people in the state, beginning with the platform support of the state's major political parties during the 1968 elections.

Why So Little Implementation?

"There is a pretty level of statewide involvement." This, combined with what Nancy Ayers calls a "monumental lump of frustration" regarding state plan implementation characterizes the state of the art today.

"A little bit of homework by a federal committee 5 years ago on funding states for EE planning would have helped," concludes B. Ray Horn. "The National Advisory Committee for Environmental Education came too late and with no funds or no time."

Centering the blame for inadequate implementation is impossible but a share of it, most assuredly, rests with the lack of decisions on the national level regarding how to best attain the goal of coordinated environmental education action.

Horn continues that "in the funding area, states were offered dimes to do dollar jobs. This created a lot of problems, especially since states which had never received pennies thought dimes were a lot."

Still other pledges of support become increasingly important since the actions of governors and legislators are dependent upon the actions of constituents and citizens. People in colleges and universities, public schools, media—all the components who helped create the plan have a critical role in making it work. In order to make the plan succeed, they must take time to lobby, contribute and seek funds and make available their human and material resources to feed the momentum of the implementation effort. An informal association of citizen groups could form the crux of a confederation of wide public support for the plan's goals.

B. Ray Horn, a recognized and knowledgeable leader in the field of state EE planning and Michigan's former planning coordinator, emphasizes the importance of broad-based support. "Plans are not decisions," he says. "Plans are inputs into a larger political process, which is not understood nor well articulated by environmental education people."

Horn goes on to explain why, declaring that "environmental educators are 'educator types'. Educator types feel very uncomfortable with political processes. Thus, there is an inconsistency between EE personalities and EE goals, stressing the need to broaden our base of support."

Others support Horn's analysis. Nancy Ayers, who recently led a discussion session on state planning at the *Conservation Education Association's Annual Conference* in New York, points out that "educators are naive and unsophisticated as to how to play the political game to get what they need."

Leadership roles are especially important. During the developmental process leading toward the published plan, this role is filled by the committee or task force undertaking the task. But once the federal or state grant runs out and the committee is disbanded, the role may, and often has, been vacated. Michigan is a prime example of what occurs when a "completed" document appears while the leaders, authors and supporters of it seem to disappear.

Once a plan is published, other leaders become important—particularly those who direct organizations which can aid implementation. A large gap often exists, however, between the *decision* to implement and the *actions* which support those decisions.

To form favorable attitudes toward the plan is a step toward becoming committed to it. Commitment must then be expressed by participating in actions that will lead to the plan's goals. These actions may not necessarily be the exact strategies recommended, but perhaps alternative ones which accomplish the same thing. The final step, support and reinforcement, should come automatically if the actions are successful. They, in turn, provide increased motivation for further involvement in implementation.

The results of this situation, Horn feels, is that several states became "disillusioned and frustrated." "Part of the problem, too," says Horn, "was that DTEE itself received dimes for dollar jobs," recognizing that EE Act funds were inadequate for the goals set forth in the Act. "More funds should have been spent on 3 or 4 big states to provide well-developed models for other states to follow," Horn speculates.

In the states that already have plans, it seems ironic that excellent plans exist without implementation. Colorado and Michigan, for example, both suffer from this problem. The reason, according to Colorado's Richard Rocchio, is that no money is available. Horn, in Michigan, sees Michigan's problems as one of interactions among a number of variables. Yet in California, Florida and Minnesota, money has been allocated to the state EE program. Apparently, what is needed are *individuals* with the time, the resources and the personality to conduct certain implementation activities on an interpersonal level.

Key Adoption Factors

Researchers will explain that implementation is hinged on three sets of variables: organization factors, personal factors and communication strategies. Those working in this field stress that all these areas must be actively tapped and involved during the plan's development.

Florida's Bureau of Environmental Education Chief, C. Richard Tillis, sums up the success in Florida by saying that "influential, representative people created the program, were committed to it, and became active" to make certain it worked. The emphasis in Florida, he explains, is one the merits of the program. "The plan itself has to be good—you have to know what the state wants and have goals and objectives that society will support."

Jonathan Wert underscores the necessity for involvement along the way. "There *has* to be involvement. Otherwise you've gathered all this good stuff, written it down, put $10,000 in a budget to print and distribute it, hoping someone picks it up. But instead it will end up on some shelf or so far down the hierarchy that you just can't get things moving."

Rudolf Schafer adds that there is no commitment to EE goals "unless there is an allocation of resources to put behind them." "Sometimes things aren't done on the basis of pure, sweet logic," claims Schafer. "You need a show of power and interest; you need EE leaders who are politically knowledgeable, who understand the nature of power, how to get it and how to use it."

Horn stresses, further, that the "technical know-how does exist. The problem is not that environmental educators can't know how to implement plans. It's that we cannot organize ourselves to put the information into effect."

Conclusion

Some states don't have plans at all. Indiana, Georgia and Arizona have just begun planning but do not, as yet, have any sort of published document. Still other states suffer from a total lack of state-level interest in EE as a whole. A comment from one agency in response to a letter asking about a state EE planning program may be typical: "You should be aware that enthusiasm for responding to your letter must be spread thin among the many agencies and private citizens inquiring for the same information which you request."

Many plans, now 3-4 years old, are being or have been revised to reflect changing needs, attitudes and awareness. Wisconsin's David Walker, Executive Secretary of the Wisconsin Environmental Education Council, reports that WEEC has been able "to initiate and test some [implementation] activities during the planning process and are hopeful that completion of the revised plan will set the stage for state leadership and widespread involvement."

This is an encouraging sign. The field of EE state planning is slowly maturing. A few states have forged into leadership by providing good planning models for other states. A subjective list would include the planning efforts of California on the merits of its monetary support programs, Colorado and Michigan for their conceptual frameworks, New Jersey for its relatively long history of successful coordination, Minnesota and Florida for their political successes and state funding support.

One need appears to be for a re-evaluation of the priority given to funding state plans by the federal government. And in this area, there is an optimistic note reported recently by Walter Bogan, Director of OE's Department of Technology and Environmental Education. In a phone interview September 13, Bogan said there might be "possible changes in policy for 1976" with regard to state EE planning. He went on to state that the DTEE is "evaluating our own experience by working with state department of education and other organizations within the states to see where we are and where we think we need to go."

Other needs seem clear: More politically knowledgeable and active EE leadership. Resources within the states to support the leaders and the plans. Better communication of information with respect to increasing the effective commitments to action. More agreement on what constitutes a good EE program. The recognition that planners must always be implementors as well. And the ultimate appreciation that masses of paper, no matter how well thought out, cannot do the job alone.

Don Albrecht has followed the development of state EE planning closely for the past several years. While in Michigan, he was Director of Education for the Michigan Student Environmental Confederation and member of the Governor's Task Force responsible for writing Michigan's State EE Plan. Don will be leaving ENVIRONMENTAL EDUCATION REPORT this month to pursue some plans of his own in Wisconsin. Our loss is the midwest's gain and we wish him the best of luck.

Reprinted with permission of the author and *Environmental Education Report*

A Basic Reading List on State Environmental Planning Processes and Problems*

Bennis, Warren G.; Benne, Kenneth D.; and Chin, Robert (eds.). *The Planning of Change*. 2d ed. New York: Holt, Rinehart and Winston, 1969.

The most comprehensive work on planned change—its roots, essential elements, dynamics, strategies, values and goals. A basic reference for the professional educational planner.

Horn, B. Ray, "Long-Range Educational Planning and the Environment: A Rationale for A State Environmental Education Plan in Michigan." Lansing, Michigan: Executive Office of the Governor, Governor's Environmental Education Task Force, 1972. (Mimeographed.)

An address given at the Michigan Environmental Education Association's Fifth State Conference. The paper places environmental education into the context of preparing for the future, planning for the yet unknown, and integrating the formal and nonformal dimensions of environmental education. The paper is based on a review of literature related to "change."

Rocchio, Richard and Lee, Eve. *Planning for EE: The Nation's Experience* (to be published by December 1974). Mimeographed copies by the Center for Research and Education. Denver, Colorado, 1973.

The report of the May, 1973 Estes Park state planners conference providing highly useful information and summaries of the status of EE planning to date. A most comprehensive overview.

Sorenson, Roy. *How To Be A Board or Committee Member*. New York Association Press, 1953.

Written for the lay member of a citizen advisory group. A copy should be given to each member to help him understand how committees function. It discusses the relationship between such groups and their executive directors. An excellent guide.

Jordan, Douglas, "Guidelines for Environmental Education Planning in Wisconsin," Madison, Wisconsin: University of Wisconsin — Madison, Center for Environmental Communications and Education Studies, 1971. (Draft copy, mimeographed.)

An excellent and useful booklet to the environmental education planner unfamiliar with the application of systems techniques to environmental education planning. The booklet presents enough detail to be a step-by-step guide.

Committee on State Planning, "State Planning: Its Function and Organization," *The Journal of American Institute of Planners*, - Vol. 25, No. 4 (November, 1950), pp. 207-16.

Since environmental education planning is one facet of overall state planning, the function of state planning as a whole must be understood. This article helps the environmental education planner see, understand, and work with the larger planning system of a state. Recommended for the beginning student of state planning.

Rettie, Dwight F., "Plans Don't Work; People Do," in Driver, B.L. (ed.). *Elements of Outdoor Recreation Planning*. Ann Arbor, Michigan: University Microfilms, 1970, pp. 299-307.

This article attempts to clarify some basic misperceptions which citizen committees and others have about the functions of a plan. "Plans are not decisions—although some plans make the mistake of flying under false colors on this score." (p. 299). Plans must be linked to budgetary processes and be sensitive to political realities. This article should be read by all planning committees.

* *Selected portions of a bibliography prepared by B. Ray Horn (Planning Coordinator/Executive Director, Governor's Environmental Education Task Force, Executive Office of the Governor, State of Michigan) for the participants of the national conference on Environmental Education Master Planning, Estes Park, Colorado, May, 1973.*

MASS ENVIRONMENTAL EDUCATION— CAN THE MEDIA DO THE JOB?

Peter M. Sandman

Assistant Professor, School of Natural Resources, University of Michigan, Ann Arbor, Michigan 48103

The potential of the mass media as a tool of environmental education is enormous. The average American is exposed to 3½ hours of television and 2½ hours of radio every day. Yet, by their very nature, these media often have no effect towards creating a spirit of concern among citizens. There is little attention paid to environmental skills—training, a lack of educational goals for entertainment programming, and most persuasive content (advertising) has been delivered into the hands of environmental exploiters. Information passed on to the public is often abstract (objective) and leads to little or no attitude change. Dr. Sandman presented a brief analysis of why the media handle environmental stories the way they do, and how the environmental educator can work with or around the basic nature of the media to produce a positive affective change in the public.

Dr. Sandman's paper may be found in: Swan, J. A. and Stapp, W. B. (Eds.), *Environmental Education: Strategies Toward a More Livable Future*, New York: John Wiley & Sons, Inc., 1974, pp. 207-247.

AFFECTIVE CONSIDERATIONS IN THE DESIGN OF OUTDOOR EDUCATION FACILITIES

Carl Vogt

Minnesota Environmental Sciences Foundation, Inc., 10304 94th Avenue, North, Osseo, Minnesota 55369

Schools, outdoor learning centers, resident camps, nature centers, and parks serve as rallying points for many individuals. During the daytime hours, schools serve an evergrowing population of youngsters who deserve the best education communities can offer. Evening occupants include housewives, mechanics, technicians, doctors, teachers, machinists, architects and many others.

In order to satisfy the needs of these individuals, vast sums of money have been spent on physical facilities. Laboratories, resource centers, specialized furniture, lighting, mechanical equipment, and independent learning carrels are some of the features that are utilized in the teaching process.

Concern for environmental problems has lead to a re-evaluation of priorities for educating youngsters and adults. The delicate balance of nature that supports the continued existence of man is being threatened by man himself.

Opportunities must be provided beyond the four walls of the classroom if man is to become truly "environmentally literate." Meaningful learning activities conducted in the outdoors can be utilized to promote at least a partial, functional understanding of ecological phenomena. The major consideration in the design of outdoor facilities is the need for community involvement. Involvement should take place all through the planning and development process. Community leaders, educators, volunteers and interested citizens provide the foundation for developing practical and worthwhile educational programs.

The design of outdoor education facilities involves cooperation and need for detailed planning. A rationale and suitable forum is needed at the outset of any planning process so that participants have an opportunity to engage in meaningful, constructive problem-solving activities.

BEVERAGE CONTAINER DEPOSIT LEGISLATION— A CASE HISTORY

Patricia D. Worden

CAPE (Coalition Advocating Protection of the Environment), Ad Hoc Committee for Beverage Container Legislation, 710 Maple Drive, Fayetteville, New York 13066

CAPE (Coalition Advocating Protection of the Environment) is a coalition of individuals and organizations concerned about environmental enhancement. This presentation explained how the coalition became interested in beverage container deposit legislation and portrayed the politics, the special interest groups, the role of mass media and of environmentalists in seeking first county, and then state and Federal legislation to abate the waste in resources and energy now being spent on one-time use beverage containers.

Prior to the 1973 election, most Onondaga County, New York legislators expressed an interest in the support of beverage container legislation. Several studies have shown that the general public is firmly in favor of such legislation. However, strong opposition comes from the beverage manufacturers and bottlers, and to date this lobby has prevented Onondaga County and the State of New York from enacting legislation. Yet, Cayuga County (a more rural County adjoining Onondaga County) has been successful in enacting beverage container legislation.

This presentation explained the role of the Central New York Regional Planning and Development Board, the support of the League of Women Voters and the endorsements of numerous community organizations. An excerpt of a slide presentation developed to tell the story was shown.

The presentation related the experience of hearings for both state and county, and assessed the opposition which included some sectors of labor, business, industry, as well as the local Chamber of Commerce.

UNION OF YOUNG ENVIRONMENTALISTS

David Kriebel

Union of Young Environmentalists, University of Wisconsin-Green Bay, Green Bay, Wisconsin 54302

Young people who are involved in the environmental movement either through schools, internships or jobs, are slowly gaining an awareness of the important role they could play in the work of environmental improvement. Students are currently in the unique position of being the only sizeable group in the environmental movement who are not handicapped by the disciplinary myopia that plagues most "professionals." As such, they have much to offer to educational programs, research projects, and governmental agencies concerned with environmental quality. This session analyzed the reasons why students have difficulty becoming involved in environmental work and pointed out ways of overcoming these difficulties of reaping the benefits of their energy and enthusiasm.

JOINT MEETING

SOIL CONSERVATION SOCIETY OF AMERICA AND CONSERVATION EDUCATION ASSOCIATION

On Tuesday, 13 August 1974, CEA conferees joined members of the Soil Conservation Society (also staging their annual meeting in Syracuse) to hear presentations from Ms. Virginia Nugent (Chairperson, Land Use Committee, League of Women Voters, Washington, D.C.), Mr. Walter J. Bogan (Director, Division of Technology and Environmental Education, U. S. Office of Education), and Mr. Michael L. Glenn (Chairman, Land Use Policy and Information Coordinating Committee, Environmental Protection Agency, Washington, D. C.).

Papers presented by these individuals (Ms. Nugent—Land Use and Urban Growth, Mr. Bogan—Education for New Patterns of Land Use, and Mr. Glenn—Controlling Land Use Through Environmental Laws) may be found in: Pritchard, Wayne (Ed.) *Land Use: Persuasion Or Regulation?*, Ankeny, Iowa: Soil Conservation Society of America, 1975, pp. 83-89. Copies of these proceedings are available for $6.00 from: Soil Conservation Society of America, 7515 Northeast Ankeny Road, Ankeny, Iowa 50021.

FIELD PROGRAM AT BEAVER LAKE NATURE CENTER

John A. Weeks

Director, Onondaga Nature Centers, Inc. Baldwinsville, New York 13027

An integrated field study of 10 ecological areas at Beaver Lake Nature Center included an aesthetic evaluation, an analysis of plant and animal communities and the abiotic factors which influence them. Emphasis was placed upon Process Education and Ecosystem Analysis by the educator and resource specialist teams.

EXPLORING THE ENVIRONMENT WITH PRE- SCHOOLERS

Phyllis S. Busch

Author, Lecturer and Consultant, Conklin Hill, Stanfordville, New York 12581

The great urgency in environmental education is for all to learn how the world works and for ALL GENERATIONS TO LEARN THIS *SIMULTANEOUSLY*. Some ways of developing a step in this direction were presented during the session. Adults observed some techniques as they are used with children in an indoor and outdoor setting. The children were directly involved with concrete materials in the real world as an aid toward developing two important ecological concepts: the role of green plants as food makers, and the recognition of diversity in the living world. Concepts arise through direct actions which children perform with objects. By setting the situation and by presenting the choice of objects the teacher, parent, leader, guides the children's concept-formation.

Amplification of Dr. Busch's approach to environmental education for Grades K-3 is provided by: Busch, P., *The Urban Environment*, New York: Ferguson Publishing Co., 1975. The text is available for $4.85 through Doubleday and Company, Inc., 100 Park Avenue, New York, N.Y. 10017.

POTPOURRI OF ENVIRONMENTAL ISSUES

Mrs. Patricia D. Worden, Coalition Advocating Protection of the Environment, 710 Maple Drive, Fayetteville, New York 13066

Mr. E. John Perry, Allied Chemical Corporation, Jamesville Quarry, Jamesville, New York 13078

Mr. Charles McPhail, Onondaga County Solid Waste Disposal Authority, Jamesville, New York 13078

THE RAND TRACT AND WEBSTER'S POND

Patricia D. Worden

This land was originally owned by the Onondaga Indian tribe of the Iroquois confederacy since around 1743. It was later settled by the first white man in Onondaga County, Ephraim Webster. After many owners, it eventually became the property of the Onondaga Valley Cemetery Association.

The Rand Tract is a very unique area of 92.88 acres of undeveloped land, south of Chaffee Avenue and west of Valley Drive within the Syracuse, New York, city limits. This very valuable historic and natural resource was first threatened with development in the 1940's by a suggested landfill operation.

The Anglers Association took an active interest in the Rand Tract in the 1950's. This sportsmen's group, through a yearly lease with the city on the Webster's Pond portion, have given countless enjoyable fishing hours to many, coupled with training in the arts of good sportsmanship and conservation. The Anglers, in January of 1972, signed a five-year renewable lease with the city to manage the pond area.

In 1968, A Campus Plan School was proposed. The Anglers, along with homeowners' groups, worked to prevent this development. In 1970, a plan was presented for developing the area with cluster development housing. The residents formed the Onondaga Community League, Inc., and with many other groups, opposed the housing proposal.

The Syracuse Environmental Conservation Advisory Committee, composed of representatives from the NYS Department of Environmental Conservation, the Soil Conservation Service, Onondaga Nature Centers, the State University of New York College of Environmental Science and Forestry, the Cooperative Extension, Syracuse Area Committee for Environmental Quality, Syracuse and Onondaga County Planning Agency, and Urban Renewal Agency, were all asked to report on the Rand Tract, and the feeling expressed in their report was that the Rand Tract could best be used as an Environmental Education area.

After much debate, in 1971, the Syracuse Common Council voted that the "Rand Tract be permanently dedicated as a Conservation Education Area under the supervision of the Department of Parks and Recreation of the City of Syracuse." That same year, the committee endorsed the proposal that the Onondaga Nature Centers, Inc. conduct a comprehensive study of the potential use of the Rand Tract for nature study, including a survey of the physiographic features, geology, soils, surveys of plants, plant associations and habitat, wildlife and wildlife habitat. Included also was a summary of the demography taking in such considerations as neighborhood population potential users, organizations involved, assessibility, safeguards to ensure protection of what is there and recommendations for potential use and ways in which the existing school curriculum can be enriched by a visit to the area. Several concerns expressed by the Anglers Association such as police protection, protection of zoning in the area, traffic control and teaching of the environment as it exists, with as little alteration as possible, were included in the evaluation. This report is soon to be released by John Weeks, Director of the Onondaga Nature Centers.

The Rand Tract is a valuable asset to the local ecological environment and one which may be developed as a viable environmental education center.

THE SOLID WASTE DILEMMA—RECOVERY, REUSE OR RECYCLE?

Charles McPhail

Onondaga County has an acute shortage of landfill sites and an acute problem with the disposal of approximately 1,000 to 1,500 tons of solid waste per day. To help relieve this acute situation, a shredder plant, which is estimated to double the life of a landfill, was put into operation last year, at a cost of $1,900,000.

A few months ago, a study was initiated to determine the feasibility of burning shredded waste for fuel to heat Syracuse University and the County office building, presently being heated by natural gas. The study is being funded by Carrier Corporation, Syracuse University and Onondaga County at an approximate cost of $50,000.

At the present time, one shredder plant is in operation and two others will soon be completed, eventually producing enough shredded waste over a 5 day haul to replace the present gas-fired boilers. The study, soon to be released, estimates the possibility of running out of solid waste fuel about 5 percent of the time, in which case, fossil fuel would supplement. Ferrous metals would be recovered after incineration. It is economically impractical to recover aluminum or glass, a perfect reason why these materials should be reused or recycled before they get to the point of incineration. Electrostatic precipitators would be installed to prevent air pollution, and the end product of sterile ash would be all that goes to a landfill, unless a use for the ash can be found in construction material.

It is hoped that the results of this study will prove that incineration of trash for fuel will reduce the need for landfills, pay for itself and be a source of heat energy.

JAMESVILLE QUARRY SURFACE MINE AS A RESIDENTIAL NEIGHBOR: ALLIED CHEMICAL CORPORATION

E. John Perry

This 3,000 acre open-pit mine operation was started in 1911, well before the surrounding area had been suburbanized. There are many problems in "being a good neighbor" and employing all of the recommended environmental safe guards for an operation such as the Jamesville Quarry. However, during recent years a number of environmental improvements have been made, and several research studies are underway which should pay dividends not only for the Jamesville Quarry but for similar operations throughout the country.

The Jamesville Quarry is part of the Allied Chemical Corporation, a leading producer of chemicals in the United States. The quarry is located near the village of Jamesville in the southeastern section of Onondaga County and covers an area of 3,000 acres. The limestone produced here is used both for chemical processing at the company's Syracuse works and by the local construction industry. Approximately 4 million tons of stone are moved annually.

History of the Quarry

While limestone has been quarried in the Jamesville area since Revolutionary times, the history of the company's quarry goes back only to the beginning of chemical manufacturing in Syracuse. One of the main reasons the company, then known as the Solvay Process Company, located in Syracuse was because of the availability of raw materials. One of the principal raw materials needed in the manufacture of soda ash is limestone.

The first limestone quarry operated by the Solvay Process Company was opened at Split Rock in 1889. Stone was quarried by hand and transported the 3¼ miles to the Syracuse works by an overhead aerial tramway. As the Split Rock Quarry became depleted, land was purchased at Jamesville, and in August of 1911 quarrying operations were begun at the present location.

Geology of the Property

Syracuse is located on the boundary between two major physiographic provinces; the Appalachian Plateau to the south, which is underlain by rocks of the Middle and late Devonian Ages, and the Ontario lowlands to the north, underlain by Silurian and Ordovician rocks. Lower Devonian rock crop out in a relatively narrow band at the base of the escarpment just south of Syracuse. Topographic features of the area have been smoothed, shaped and covered by glacial action. On the property are the remains of two glacial plunge basins.

The particular rock at Jamesville was formed during the Paleozoic Era, 200-600 million years ago. The quarry formation is made up of rock from the Devonian Period comprising the following members:

I. Onondaga Formation

A. Seneca Member	A dark colored, fine-grained limestone with some black chert.
B. Tioga Bentonite	A 4 inch bed of yellow-grey clay derived from volcanic ash separates the Seneca and Moorehouse Members.
C. Moorehouse Member	A dark colored fine-grained limestone with some black chert.
D. Nedrow Member	A dark colored fine-grained limestone with some black chert.

Crushed Aggregate is produced mainly from the Seneca, Moorehouse and Nedrow members.

E. Edgecliff Member	A light grey, medium to coarse crystalline limestone. This stone is used as process, chemical stone, being of very high Calcium Carbonate content (96 percent) and low Silica Content (2 percent $S.O^2$).
F. Springvale Chert	A series of cherty lenses interspersing the bottom two layers of the Edgecliff Member.

II. Oriskany Formation

A sandstone, some of which is poorly cemented and friable. The formation is used only for Rip-Rap.

III. Manlius Formation

H. Pools Brook Member	A dark colored, fine-grained, dense, dolomitic limestone. The Calcium Carbonate content is in the range of 85 percent.
I. Jamesville Member	A massive, dark grey, fine-grained limestone. Calcium Carbonate content is 93 percent.
J. Clark Reservation Member	A dark colored, fine-grained, dense limestone which upon weathering develops an angular fracture pattern. Calcium Carbonate content is 97 percent.
K. Elwood Member	This member is the present Quarry floor.

The Edgecliff, Pools Brook, Jamesville and Clark Reservation Members are used for chemical process stone.

Two northwesterly tending pressure faults cut completely across the quarry, causing a local steepening of the bedding.

The important areas of air and water pollution receive special attention at Jamesville. Extensive dust collection and suppression systems have been installed to control dust. Waste water from the washing plant is sent to a 20 acre settling pond before being returned crystal clear to Butternut Creek. Control of noise is a continuing program involving experimentation and installation of sound suppression systems on equipment.

A SYMPOSIUM
THE ETHICS OF TEACHING FOR ATTITUDINAL CHANGE AND VALUES

Discussants: Dr. JOHN GUSTAFSON, *Professor*, Department of Biology, State University of New York at Cortland, Cortland, New York 13045

Dr. RICHARD A. BAER, JR., *Associate Professor*, Department of Natural Resources, NYS College of Agricultural and Life Sciences, Cornell University, Fernow Hall, Ithaca, New York 14850

Mr. NOEL F. McINNIS, Environments For Learning, P.O. Box 4174, Madison, Wisconsin 53711

Moderator: Mr. BARRY W. JAMASON, *Coordinator of Environmental Education*, New York State Department of Education, Albany, New York 12224

Mr. Barry Jamason:

We have an interesting subject this morning. We're all concerned with strategies for surmounting the obstacles that seem to be interposed between us as environmental educators, or conservation educators, or teachers of environmental education, and reaching the child with these all-important concepts of life and of living within, and in a beneficial and harmonious way with our environment. We make it a certain function by taking this position, because we assume that the thing to be done is to either get the funds that are necessary or get the administrators support that's necessary, and then, without a second thought, we're free to go ahead and work with the children. But today's panel, or symposium, raises the interesting question of "How ethical is it for us to presume the impact in the way that we do upon children in this realm of environmental education or in general education as it relates to environmental education?" Are we making some assumptions about the rights that we have with influencing children, or are they traditional rights that we have as educators and teachers? I think some of the finer points of this issue may be brought to life this morning.

Dr. John Gustafson:

I'm happy to be a part of this symposium this morning. And we are addressing this question of whether it's ethical or not to try to teach or transmit values. I'd like to first of all kind of warm you up this morning with a couple of things—a little concept of education in general, and environmental education in particular after you've had a chance to see pigpen for a minute (slide). I don't think you can see that too well, but the basic element is content, of course, and we all recognize that content is just the very bare bones of what you need to have when you teach anybody anything. Then we try to get students to put this content into some meaningful ideas, we call them concepts, perhaps, just to be euphonious here. But recognizing that merely getting people to organize what they know into meaningful concepts, which is a very big goal in education, is not enough. We have to somehow or another get people to live by what they know, and so we try to get them into a third dimension—something to do with conscience, or whatever you want to call it. This hopefully will result in some changed behavior. And without changed behavior, there is really no value to the education which has been acquired. Now, content plus concepts is what I call environmental literacy in the environmental education sphere. But environment sensitivity can only come about, it seems to me, if we have the three dimensions to education: content, concept and conscience. Now a very basic premise which I'd like to throw out to you this morning is based on these couple of ideas.

I think that the only effective education is that which changes behavior. And the only way that behavior is effectively changed is by change in the attitudes which motivate it. I'd like also to postulate that we teach, or maybe transmit is a better word to use, values and attitudes all the time, whether we're in the classroom, or in the nature center, or at home, or in our car, or wherever. We can ask—Why take English? Or why take Math? Or why take History in School? We make our students take these subjects because we assume (1) certain values come out of them, and (2) that they are necessary for our social well-being, community well-being and our personal well-being.

Now one of the main threats in teaching attitudes is the element of hypocrisy, which is always present in some degree. We often have heard it said "Don't do as I do, but do as I say." This implies that element of hypocrisy that gets in the way of transmitting values. Our own true values come through in spite of what we say or learn—sometimes in spite of what we do. Now the methods which are employed in transmitting values, it seems to me, are exemplary and experimental, rather than curricular. The example we set, and the experiences we and our people share, transmit values much more than curricular design. Hein and Gerlocke (1970) in their research article on committed environmental activists stated: "During our five years of research in movements of different kinds, we have been able to identify five factors that are characteristic of a growing movement, even though the movements may have different goals and different means of accomplishing them. One of these factors is personal commitment—we have found that individuals who perceive themselves as truly committed to a movement, and who are perceived by their fellow participants, have two things in common—first they see their commitment as having been generated out of a subjective experience or series of experiences, following which they thought themselves to have radically changed. Changed in the way they view themselves as well as in the way they relate to others. We have called these identity altering experiences. Participants in religious movements, of course, call it "conversion."

The comparison in that report with religious conversion is interesting and significant, it seems to me. And I think that basic Christianity is a good case study. Jesus fought constantly to bring about attitudinal change and acceptance of a new value system. Without, I think, a great deal of success in his own lifetime. And with very mixed success in the years since. Now the human dilemma is this, as I see it: How to preserve society and our social order while also

preserving individual dignity, freedom of choice for self-expression and fulfillment?

The basic human instincts which were originally designed to preserve our species, are in many cases today, antithetical to our survival! Our instincts are designed for individual and small group survival, family and clan (widely dispersed sparse populations). Today we live like ants, but we don't have the instincts of a highly social organism such as ants. The biblical, or perhaps Christian answer to this dilemma was love and power, both derived from God, and requiring a conversion—Jesus called it "being born again." That's an interesting phrase and I think there is some agreement by those of us who are in environmental education. Because if you will compare the change in your life which occurred when you were born physically, and its many ramifications, there are very many good parallels to what Jesus was talking to Nicodemus about when he said that you must be born again. In the Christian conversion experience, as described in the New Testament, social sensitization (i.e., love for all men,) accompanies self-realization, which is a new understanding of who I am in relation to God. In other words, the way out of the human dilemma, which I described above, is to relinquish attitudes which radically change our values and behavior, towards that which enhances social and environmental survival, even at the expense of personal interest and personal survival. If you don't think that is happening in today's world, I could introduce you to people who have made that kind of sacrifice and perhaps some of you are in that category yourself.

The question before us today is: Is it ethical to teach on transmitting attitudes and values especially when the process of that transmission goes to the very core of human nature, and involves methods that may be traumatic? We think of an ethical construct as any activity which is good—good for society or good for the ecosystem. And what is good anyway? I think we can define what is good: I would say that good is that upon which thoughtful, knowledgeable and disinterested persons agree. I think we can define that which is good, specify it and identify it. Conversely, unethical activity is what is detrimental to society and the ecosystem. Now what is ethical behavior today anyway in the context of our discussion this morning? Activities which foster the common good, which recognize that the good of the individual is contained within the common good—I think these kinds of activities are ethical. What is unethical behavior today? Activities which adversely affect the common good or which deter activities necessary for the common good, or make them unworkable or unattainable. These I think are unethical activities today.

So I submit to you that to neglect to transmit or teach values necessary for environmental and social well being *is* unethical today. I think a lot of us have been involved in unethical behavior, if you assume that this is a correct definition for our situation today. This can be either unethical behavior overtly, or it can be unethical nonbehavior I suppose, in other words, just a failing to do something we know we should do. I remember reading once on a church bulletin board: "to remain silent or passive when one should speak or act is wrong." Now the antithesis to love is not hate, as most people would presume, but apathy and inaction. Love can only be expressed in action. And I think the biggest threat to our environmental attitudes of love and concern for the ecosystem or fellow men, even for ourselves, is a don't give a damn attitude. Love begins when someone else's well being is more important than your own.

Now if ecology is the study of the environment, ecophilia is love of your environment, and I think perhaps you ought to think about becoming the first ecophiliac on your block. In other words, "give a damn." Acquire some social and ecosensitivity, and then transmit these values just like you transmit measles—to everyone you meet.

Dr. Richard Baer:

Over the past 10 years, largely through the influence of individuals such as Lewis Raths, Merrill Harmin and Sidney Simon, and what has come to be known as the "values' clarification" movement, many schools and colleges have begun to introduce values discussion into their total curriculum. Students are being helped to become more aware of their personal values and how these affect their lives. Teachers are learning new techniques for helping students clarify their values—techniques, that to a considerable extent, grow out of the works of such pioneers as Carl Rogers and Abraham Maslow. Rather than indoctrinating students with a pre-chosen set of values, "values' clarification" methods help students become more aware of who they really are through understanding what values they have chosen in the past, and wish to choose for the future.

To many students, these new values' clarification techniques have meant the difference between apathy and enthusiasm, between aimless drifting and purposeful involvement, between inconsistency and consistency, between role playing and open presentation of oneself. Students who are flighty, over dissenting, over conforming, and under achieving, have found that as they became aware of their real values, they were able to progress towards far more satisfying and fruitful ways of relating to people and things around them. School came to take on fresh meaning for them and they began to enjoy people and things in a new way.

While welcoming the fresh contributions of the values' clarification movement, adherence of the more traditional approach to ethics based mainly in the fields of philosophy, theology, and political theory have been puzzled that there has been so little apparent awareness on the part of the authors in the value clarification field of more than 25 centuries of reflection on value questions, ideas that go all the way back to Moses and Socrates, and to such figures as Jesus, Thomas Aquinas, Calvin and Comte? Many agree that new insights from psychology and sociology, and other modern disciplines have much to contribute to the ongoing discussion of values. Yet, according to traditional theorists, unless these insights are intrinsically related to the mainstream of western philosophy, theology and political theory, they can at best represent only a very partial framework for dealing with questions of environmental education. Many ethicists working within a more traditional framework of values' discussion feel that the work of such authors as Raths, Harmin and Simon (and I would refer particularly to their book *Values and Teaching*, 1966) carries with it a number of unexamined presuppositions or assumptions that deeply influence the method and total orientation of their work, but which the authors do not take the time to discuss.

It is thus felt by some ethicists, including myself, that contrary to what these authors appear to be saying, they actually press on their readers a number of significant assumptions. That is why specific understanding of man in the world is a form of indoctrination. Such indoctrination, although perhaps it cannot be avoided, would appear to be inconsistent with much of what these authors affirm. Moreover, in a pluralistic society, it would seem best to be as explicit as possible about the presence and nature of such indoctrination, insofar as it becomes a part of our educational structures and operations.

Just two examples may suffice to illustrate this point. Raths, Harmin and Simon assume throughout *Values and Teaching* that the individual is free to make value decisions in an open and rational manner. Such a position certainly has been stoutly defended by important thinkers in the western world. But it is also true that just as many first rate thinkers in western history, including Augustine, Calvin, Pascal and Freud, have taken a very different position on this issue.

Augustine, for example, held that the only real point of freedom in a person's life is the point at which he is free to say yes or no to God. That is, to choose to serve God or to serve some other center of value and meaning. Up until World War I, and in the catastrophic events of western history since that time, Augustine's position was felt by many to be naive, gloomy and even irrelevant to the modern world. Melville and the other lonely voices had not thought so, but they were all largely ignored in the light of the dominant optimism of the time.

Likewise, Freud wasn't so sure that man's freedom, rationally to direct his own life, was really there, but the optimist similarly chose to ignore many of the implications of Freud's work. Modern advertising techniques, witness the powerful influence of Madison Avenue on American life, also attest to the fact that we may be less free than we sometimes think. Many of our decisions are determined in large part by pressures of which we are only vaguely aware. Or does one easily forget what Germany, in many ways the most intellectual and scientifically advanced nation in the world, did to 6 million Jews, under the leadership of Adolf Hitler?

The point being made here is not that Raths, Harmin and Simon are wrong in their assumptions about man's freedom to choose values and direct his life rationally, but rather that their position is only one of several that have been widely held in our culture, and that in a pluralistic society, it should not be uncritically imposed on our education structures and operations. A second example can be more briefly described.

Raths, Harmin and Simon insist that each individual is responsible for choosing his own values, and in short, is the final arbiter of what is appropriate for his own life. Yet, in spite of the fact that this position has never been widely held throughout human history, the authors offer no rationale for it. They simply assume it and, in effect, uncritically press this assumption on students with whom they work. The Judeo-Christian tradition, by way of contrast, has always insisted that God is the final arbiter of values, and that his will can be known through some combination of the scriptures, the tradition and present life of the community of believers, that is the church, and the immediate internal witness of the Holy Spirit in the life of the community and of the individual. Most primitive cultures, of course, whatever their beliefs about the gods, have seen all-important value decisions, or almost all of them as mediated through the community as a whole, or more often, through certain designated leaders within the community.

Many traditional ethicists would argue that a book such as *Values and Teaching*, insofar as the authors neither describe nor critically examine their basic assumption, nor make clear to the reader what is their own fundamental world view, actually becomes a more subtle form of indoctrination than most traditional moral teaching. This is one of the key statements in my paper. The uncritical reader comes away with the impression that the authors are being "objective" in their use of the values' clarification methods. Whereas, *from the standpoint of a more critical, philosophical approach, it would appear that they rather are absolutizing their ethical relativism and their largely unarticulated but nevertheless quite specific view of man in the world.*

Most traditional ethicists feel that if environmental education is to reflect genuine academic integrity, if it is to take cognizance of the mainstream of western cultural history, then it must find ways of integrating the work of philosophers, theologians, novelists, poets, artists, political theorists and other thinkers into values discussions and not rely only on the more recent work of proponents of values' clarification. Nor can this mainstream of cultural history legitimately be used simply to provide discussion input for the values' clarification method as Raths, Harmin and Simon tend to in *Values and Teaching*. Rather, there needs to be a thorough interaction of ideas at the level of basic method, presuppositions, world view, fundamental understanding of man and nature, and so on. Perhaps two illustrations will help clarify this point.

British psychiatrist R. D. Lang, (particularly his book *The Politics of Experience*,) raises many provocative questions about what it means to be "normal," or "well-adjusted" in a society which itself may be dreadfully sick. It is fairly clear that the psychological profiles of most of the engineers and Pentagon officials who have planned America's arsenal of hydrogen bombs and the missiles to deliver them have psychological profiles that probably would turn out to be more nearly "normal" and "well-adjusted" than those of the handful of students, Quakers, and others who dedicated so much time and energy to protesting these activities. Similarly, the dissidents who marched on Washington to protest the war in Viet Nam, including the napalming of civilians and the mass defoliation of large areas of the countryside, may well be less consistently clear about their values than the army generals who planned these massacres and environmental obscenities. Perhaps even more frightening is the discovery that not a few of the top leaders in Hitler's Germany sincerely believed in what they were doing, and would have scored reasonably well on Raths', Harmin's and Simon's checklist of eight criteria for determining what is a genuine value. All of this forces us again to raise the question, "Is it really all that obvious that work in values should focus on process rather than on content?" The second illustration is more directly related to environmental education.

Writers such as Lynn White and Ian McHarg have decried what they consider the anthroprocentrism of the Judeo-Christian tradition and its consequent inability to offer a viable ethic for the environment. However one evaluates their arguments, and it is important to note that many first-rate biblical scholars take sharp issue with them, it would seem that the values' clarification method is built on an understanding of persons which is far more anthropocentric than anything that could reasonably be predicted as Judaism or Christianity. What could be more anthropocentric than the insistence that each individual is finally responsible for determining his own values.

Such a position provides no convincing basis, for example, for an ethic of responsibility for the future as do Judaism and Christianity. These religions, and I use this by way of illustration, argue that God's love is shown to each succeeding generation and not just to those now living. They also argue that wreckless and unnecessary disfoliation of the earth, the necessary life support system for future generations, violates the will of God, who desires the fulfillment and fullness of life, not only for the present generation, but also for generations not yet born.

All of these considerations would make it appear that if the state of the art of environmental education is to be advanced on a fundamental level, there is a substantial need for intensive encounter between representative persons from these two very different approaches to values' education. It would appear that both traditional ethicists and proponents of the method of values' clarification would have much to gain from such interaction. And that the ideas resulting from such an encounter not only would stimulate new thinking in many scholars and educators across the country, but also would provide a solid foundation for consequent work in curriculum development. I'd like to just make a couple final points more briefly.

I'm very well aware of the distinction that these authors make between value indicators and values. I think the distinction is questionable in several ways, but at any rate, I simply wanted to make the point that I am aware of this distinction in this discussion. I think what I've said holds its own weight and the argument holds up in light of that distinction. I haven't ignored it.

Finally, I'd just very briefly like to say that the kind of thing that I would suggest is that the teacher be very much

more explicit about what his own values are. I think he owes it to his students to share these values, that he encourages his students, not only to share their ideas, but also their feelings, sometimes their anger, their cynicism, and to get this kind of data and input into teaching and seminars. What I would suggest is that we become more articulate and take more time in explaining what some of the basic options are. Are we willing, for instance, to take a week in a course to explain what the American Indian attitude toward nature has been? Or, I think most importantly, in so far as these are the dominant traditions in our own culture, are we willing to take the time to really think through what the attitudes of Judaism and Christianity would be towards nature and environment. Here I believe there's just been an incredible superficiality in the way in which the work of authors such as Lynn White and particularly Ian McHarg, has been so easily accepted. Lynn White is a first rate thinker and one can't pass his ideas off lightly, but there have been some substantial rebuttals of his agreement by technical scholars in Old Testament and New Testament. On the other hand, I think Ian McHarg would do far better to stick with Landscape Architecture. He is extraordinarily naive when he comments on philosophy and religion. He's an exciting individual, a tremendous thinker, but he has little sense of balance, it seems to me, when he moves out of his field.

Well, are we willing to take the time to do some thinking in these areas ourselves and then present these to our students? Let me just end with a question which I can diagram over here to illustrate the kind of ways in which it happens. I see a lot of entering students, particularly freshmen, say that it is arrogance for a human being to think of himself as any greater value than any part of nature. I usually challenge his belief with a little test. I have a two-lane road going around a sharp curve and there are rock cliffs on each side so that you can't turn off the road, and they're coming around at 50 mph which probably is a little fast (speed limit 30 or 40) suddenly you see on the left side of the road a caterpillar and on the right side of the road a human baby about 10 months old. Which are you going to hit? You can't stop the car. A very simple pragmatic test like this tells us a great deal more about our operational values and also I think our beliefs, then all we might say about man being fully a part of nature, and it being arrogant to think that we, in any sense, are more valuable than any part of nature. Now don't misinterpret what I'm saying.

I take very seriously the fact that we are part of nature, and that we need to develop new respect in reverence for not only living things, but also nonliving things. But what I would suggest is that we need to do some far more sophisticated thinking about, for instance, what a term like nature means. As I indicated earlier, if we are a foolish part of nature, then polluting the environment is just as natural as developing ecosensitivity. We need to think about those kinds of questions. Try this test out on yourself and see how you score.

Mr. Noel McInnis:

"Now we're dealing with a paradox—there's something paradoxical about the ethics of teaching values. When you're dealing with paradoxes, you're dealing with approximate solutions to insolvable problems. In the gospel, according to Robert Keinlein, there are no paradoxes that can't be paradoctored.

Teaching, as we've used it, connotes terms meaning indoctrinating, but it doesn't really connote driving force, it tends to connote something more of an imposition rather than a nurture. So the question I would raise is: Why drive toward values? Why help people become aware of their values? Why help people clarify their values? Why help people examine their values? Why be concerned about people sharing our own values? There are a couple of fairly good answers to that, based upon the things that we value in common, at least in the western world and these are pretty universal.

In the first place, we place a tremendous value in the West on self-determination, freedom of the individual. I would say that right there is a good starting point for the question Why educate values? Why apply the educational process to values and valuing? Because I would maintain that our behavior is completely determined, until we know why we behave the way we do, and we can't really understand why we as individuals behave the way we do unless we understand the assumptions and values upon which our behavioral choices are made. I think that in certain conditions B.F. Skinner is "right-on". I believe that our behavior is determined until we know how—then there is perhaps some problem to preserve freedom and dignity. But our values have us until we know what they are. Then perhaps we can say we have our values.

Another value which is very important in the West, and particularly very important to educators is rational, intelligent, logical behavior. In the 19th century Disraeli had something very important to say about logic. He observed that logic is a system by which we can go perfectly wrong with absolute confidence. And a more helpful version of that insight came from Jerome Weisler a few years ago when he said, "There's really nothing wrong with our logic—the problem is with our assumptions." If we offer value ethical behavior, as we do, and if there is something more than just logic, which is involved in rational and intelligent behavior, as assumptions are important also, you will never answer the question "why be concerned as educators about values?"

It does seem that very much of what we are concerned about in terms of the behavior that we are attempting to educate has to do with the assumptions from which that behavior comes. The old cliche of the computer people "Garbage in, Garbage out" applies here. If your assumptions are garbage, the behavior which represents your conclusions on the basis of those assumptions is going to be garbage.

The next question is, "How do you draw forth values?" And it seems that all attempts to educate values can be commonly described as "management of cognitive dissonance." Whenever we attempt to educate values in the valuing process, we are in one way or another attempting to place people in situations where they are provided experientially, or otherwise, with information which is contrary to some of the things they believe. And we put them in a situation where we create what their psychologists call cognitive dissonance (i.e., somehow I have to square this with something that I cherish and believe and prize to which this is contrary). **The common element, I think, of all values education is somehow creating the cognitive dissonance and then providing resources for resolving that cognitive dissonance.** And this is the point on which I agree with Dick Baer: That you have to consider the issue of indoctrination, and this gets down to the ethics of values teaching/values clarification.

I would like to entertain as an hypothesis which I have not examined thoroughly to my satisfaction, but which I tentatively tend to hold to: There is absolutely no intervention of any kind in the thinking of other people which is totally free of indoctrination. That's a relative statement because there is more or less indoctrination in everything, but it's also an absolute statement in that I'm saying that no kind of intervention and the thinking of other people can be indoctrination free. Therefore, one of the cardinal ethics, I imagine, of values education is "being honest about the fact that however you are approaching this education of values, you are not yourself totally free of some form of indoctrination. I think it's essential to be very open about that because the hypocrisy is not the fact that what you say doesn't hold with what you do. Hypocrisy is the fact

that you are doing that. So I think we have to be very open about the nature of our means. And the nature of our means is always such that there's always a certain amount of indoctrination involved. I guess the ethical obligation is to be as free, or as limited in our indoctrination as possible, especially since, in any situation where a person is an educator of the values of other persons and he creates cognitive dissonance, and is providing resources to resolve that cognitive dissonance, he is getting first crack at the cognitive dissonance that he created, and that puts him in an extremely responsible position.

I think there also has to be honesty, not only about the means, but also about the end. I think one has to be very clear about the set of values that one brings to a values' education process. I think that the values' clarifier should make his own values clear, and I think he should be honest about the fact that his preference would tend toward people who are clarifying their values to consider his particular values very carefully and hopefully to be influenced by that consideration. If you're not honest about that, then again I think there's hypocrisy involved.

So I conclude that there are three guidelines in terms of the ethics of teaching values: (1) Do not create cognitive dissonance in excess of your available resources to resolve it. (One must know very acutely what kind of resources one has available.) (2) Do not close off avenues of inquiry which are other than and/or contrary to your own. As one who is educating the values examination (the valuing process), you have first crack at whatever dissonance you're able to create, which gives rise to this need for resolving and a need for more information to resolve an ambiguity. I think you should be honest about that and be honest that these are the resources that you're presenting. But, I don't think that you should exclude or interfere with the need of anybody to get at other resources which might tend to reinforce their original position and resolve the dissonance in that way. (3) The third guideline is mystical. A student submitted a poem to me several years ago, the first line of which was "let us walk gently among one another's minds cultivating delicate rhythms." If you look at the universe in terms of rhythms as the physicist does, or as the Zen master does, and you think about it for awhile, you, I think, would tend to agree that for all the rhythm in the universe, among the most delicate are those which resonate in the human mind. I think the image of cultivating these rhythms, of nurturing them, of allowing them to be fulfilled is very worthwhile, and I think the injunction, when you're cultivating delicate rhythm, is to walk gently. The final guideline: if you're going to educate values, walk gently among the minds of those whom you are educating, and cultivate those delicate rhythms with appropriate delicacy.

DOCUMENTED SYMPOSIUM

ROLE OF PRINT AND NONPRINT MEDIA IN ENVIRONMENTAL ATTITUDES

Mr. HOLT BODINSON, *Director*, Educational Services, NYS Department of Environmental Conservation, 50 Wolf Road, Albany, New York 12201

Mr. ROBERT F. HALL, *Editor*, **The Conservationist**, NYS Department of Environmental Conservation, 50 Wolf Road, Albany, New York 12201

Ms. GRAYCE PAPPS, Project Director/Producer, "The Land and Me", Maine Public Broadcasting Network, Alumni Hall, University of Maine, Orono, Maine 04473

Mr. RAY MULDERICK, Environmental Protection Agency, Waterside Mall, 4th and Main Streets, SW, Washington, D.C. 20460

Consumer behavior, entertainment choices, political mood and the American life style all are in a large part shaped by our constant bombardment by the mass media. Most would probably agree that both print and nonprint media have also been extremely important in the shaping (for better or for worse!) of our environmental attitudes.

Ms. Papps documented "The Land and Me," an environmental education simulation game dealing with land use, as a model for replication. This was a 5-hour television series developed and used in Maine. A 30-minute video presentation summarized the major elements of this program including voter participation and "Eco-Acres" (a board game for building your own community) land law summaries, etc. Requests for materials describing "The Land and Me" program should be directed to Ms. Papps at the above address.

Mr. Hall shared his experiences as editor of a state department bimonthly magazine. For many years the NYS *Conservationist* was almost exclusively a "fish-game-recreation" publication. With departmental reorganization, the magazine drastically changed its scope of coverage, adding articles on all subjects of environmental concern. Many feared strong repercussions from the sportsmen interests (and there certainly were a few). Mr. Hall discussed factors involved as the magazine's circulation grew to nearly 200,000 subscriptions.

Mr. Mulderick presented several television environmental public service announcements produced by the Environmental Protection Agency and aired nationally on commercial broadcast stations. Through candid critiques of each public service announcement, Mulderick discussed criteria pertinent to acceptance by commercial station managers for airing, and their differential effectiveness in shaping viewer attitudes. Humor was indicated as an important component for achieving viewer attention to public service announcement messages.

REPORT ON AN ENVIRONMENTAL EDUCATION EVALUATION

Dean B. Bennett

Co-director, Maine Environmental Education Project, 111 West Main Street, Yarmouth, Maine 04096

A 15-minute slide presentation described a highly controlled evaluation of a typical environmental education 2-week learning experience unit at the junior high school level. A research design was employed which used experimental and control groups with pre- and post-testing of randomly selected half-groups. The three variables tested were thinking skills in environmental investigation, evaluation-problem identification and problem-solving. Results indicated that environmental education learning experiences can contribute within the existing curriculum to the development of a student's ability to evaluate his environment and participate more successfully in the problem-solving process.

VALUE CLARIFICATION SHEETS— A STRATEGY FOR ENVIRONMENTAL EDUCATION

Ray E. Quinn

Assistant Professor, Wildlife and Fisheries Sciences, Texas A&M University, 507 Kyle Road, College Station, Texas 77840

The use of Value Sheets is one of several valuing techniques described by Raths, Harmin and Simon in their book *Values and Teaching*. The value sheets themselves consist of a statement of fact and/or opinion plus a series of questions. The technique for using them is usually as some for of "discussion starter" in a class.

Twenty of these value sheets were developed around a theme "Focus on Environmental Values" for a study done in South-central Texas. A description of the strategy employed was presented. Copies of the value sheets upon request.

COMMUNICATING ATTITUDES AND ETHICS TO YOUTHS

Phyllis S. Busch

Author, Lecturer and Consultant, Conklin Hill, Standfordville, New York 12581

To communicate best is to teach best. This does not mean a presentation of facts, but a creation of settings where there is an opportunity for the learner to perform, to do, to become involved with concrete materials, since concepts arise out of such actions with objects and not from the objects themselves. Least effective is the telling of what are the "proper" environmental attitudes, ethics, values.

AN EXPERIMENTAL INVESTIGATION OF ATTITUDE CHANGE

Richard H. Evans

Associate Professor of Management, Syracuse University, Syracuse, New York 13210

The subject of attitude change is of interest since if attitudes can be changed, then with a fair degree of probability behavior can also be modified. Such a relationship has a whole range of implications for those interested in conservation. The linkage between attitude and behavior is by no means direct. Nevertheless, the linkage is predictable and manageable [3, 4].

As the basic focus of this paper is attitude change, it will be useful at this stage to review the theory behind the subject. The assumption is made in this paper that attitude change occurs due to the theory of cognitive consistency [6]. This says in effect that people need consistency in their psychological set. One's psychological set or cognitive structure consists of such variables as beliefs, values, norms, evaluations, and behaviors. When a condition exists that causes inconsistency, the individual searches for a balance among the variables. In the process of striving for consistency of balance certain variables may change: two are: attitude and behavior. It should be pointed out that attitude and behavior change are only two modes for resolving inconsistency—others exist.

The construct attitude consists of three dimensions or components [10]. The affective dimension refers to the evaluation of an object in terms of its being good-bad; the cognitive dimension focuses on the belief which one has toward an object; and the behavioral component involves one's predisposition to act towards a given object. These three dimensions are actually three ways to measure the construct attitude. In the past, studies have often focused on the affective component of an attitude. In this study both the affective and the cognitive components will be measured.

The primary purpose of this investigation was to determine if attitudes may be changed towards a conservation topic through the use of a selected message.

Attitude Formula and Hypothesis

The Fishbein attitude formula [3] was used in this study. It reads as follows:

$$A_a = \sum_{i=1}^{n} B_i \cdot a_i$$

where: A_a = the attitude toward some act a

B_i = belief i, that is, the probability that a involves a consequence i

a_i = an evaluation of i.

It was mentioned previously that both the affective and cognitive components would be used in this study. This refers to B_i and a_i in the above formula. B_i and a_i are measured in this investigation according to the dictates of the basic Fishbein model. The components of the Fishbein formula have been operationalized in different ways and a dispute currently exists regarding their interpretation. As an example, Bass and Talarzyk [1] view beliefs in terms of importance rather than as a concept that involves probability. However, it is not the purpose of this paper to discuss the different interpretations of the Fishbein formula or other multi-dimensional models. It will suffice to say [12] that the multi-dimensional models offer some advantages over the uni-dimensional attitude scales which essentially measure overall like-dislike. The uni-dimensional instruments offer some measurement efficiencies and they provide a summary of one component of the attitude construct. On the other hand, the multi-dimensional models not only measure more than one attitude component but also they involve the attachment of weights to each attribute or consequence of the subject being studied. In this investigation, as we are studying the act of littering or pollution, the consequences of this subject are quantified, or in other words, weighted.

In this study the following hypothesis was tested: pre-test attitude equals post-test attitude.

Methodology

Subjects. The subjects consisted of 121 undergraduate students from the School of Management at Syracuse University. The pre-test involved 58 students and the post-test contained 63 students.

Procedure. Subjects were selected and analyzed in two different stages—Stage 1 and Stage 2.

Stage 1 involved belief collection and message construction. At this phase, the subjects were asked to list why they visited a national park. In other words, they were asked to indicate what i (belief) they felt was associated with o (national park). A frequency distribution of the beliefs was constructed and the top 12 were selected for inclusion in the message.

The message content primarily involved beliefs. In the message the strength of the beliefs was reduced. An example statement would be that littering will adversely affect fishing and photography, fishing and photography being beliefs strongly associated with the object o. In addition to belief strength information, the message also contained some balanced statement data regarding littering or pollution in general.

Stage 2 of the experiment involved a one-group pre-test-post-test experimental design. The pre-test questionnaire measured attitudes and behavioral intention. One week later the same respondents were presented with the message and the post-test. The pre-test and the post-test were identical.

Variable Operationalization. The operational definitions that were used in the study may be stated as follows:

1. Attitude

   The basic formula for the attitude measure was the Fishbein Model that was discussed previously. In terms of the belief component the subjects were asked to indicate on a semantic differential type scale to what degree they felt the act of littering in a national park was rational, unpleasant, harmful, etc. An 11-point scale was used with the dipolar statements of low and high. The same type of rating scale was used for the evaluative component, the exception being

that the dipolar statements were good and bad. The attitude score of each respondent was determined by multiplying the belief and evaluative component for each act consequence and then summing the results.

2. Behavioral Intention

This construct was measured by asking respondents to indicate the probability of littering on each visit to a national park. The scale in increments of 5 went from 0 to 100.

Results

The results of the study are depicted in Table 1.

Table 1. Mean Score Changes in Attitude Behavior

Behavioral Variable	Pre-test	Post-test	t-test
Attitude Behavior	141.1	124.9	1.10*

* Significant at the .15 level.

The hypothesis mentioned previously was rejected. The attitude score changed from the pre-test to the post-test. The reduction in the attitude score signifies a positive change relationship. This means, in other words, that the attitude of the subjects toward the act of littering or pollution decreased after they received the message.

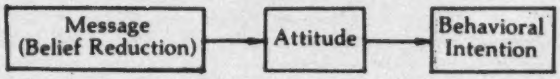
The level of significance was higher than what is usually considered normal. However, this was an exploratory study and statistical significance was not one of the primary objectives. The results of a study may be considered from the standpoint of statistical significance and operational significance [13]. In terms of statistical significance this study was rather weak. However, with respect to operational significance the results of the study were important.

Discussion

The most significant finding in this study is that for a given stimulus attitude behavior changed. It is surmised that the attitude construct of the respondents changed due to a reduction in the belief level of the respondents. In other words, the message containing belief reduction signs caused the respondents to re-assess their positions with respect to the rationality, pleasantness, cleanliness, falseness, honesty, ethicalness, harmfulness, lawfulness, acceptability, and safeness of the act of pollution or littering. The re-assessment of the subjects' positions resulted in a decrease of the attitude construct. As mentioned previously, consistency theory may be used to explain the attitude change. McGuire (1966) has suggested that inconsistency may be produced by presenting the respondent with new information and that inconsistency may be reduced through different modes [7]. One of these modes is a change in attitude.

The significance of developing an attitude change is that attitudes relate to behavior and by changing attitudes one can also change behavior. In this study, the inference is that a change in attitude will produce a change in littering or pollution behavior intention. Previous studies have indicated that attitude scores calculated on the basis of multi-dimensional multi-attribute measures are significantly related to behavior or behavioral intention [8, 10]. In this study, the correlation coefficient was approximately .50. This is not as high as has been reported in other studies [4]. The behavioral intention score of the respondents changed from 19.7 to 15.3 (t-test = 1.07 significant at the .15 level). Figure 1 graphically indicates the linkage between the message, attitude, and behavioral intention.

Figure 1. The Linkage Between Message, Attitudes, and Behavioral Intention



Cognitive consistency theory may also be used to explain the change in behavioral intention that took place as a result of the attitude change. In other words, in order to maintain consistency or balance after a message with new information, attitudes and behavior may need to change to become congruent with the message. As mentioned previously, the linkage between attitude and behavior is not direct, yet it does appear to exist. It is hypothesized that attitudes and behavioral intention are related, but in order to make the relationship even more predictable referent behavior and various situational factors should also be considered. In this investigation it was shown that attitudes and behavioral intention are linked, which suggests that the "act" of behavioral intention is providing a degree of reinforcement. A higher correlation coefficient between attitudes and behavioral intention may have been produced if the reinforcement of the linkage was stronger [2]. Referent behavior refers to the norm set by one's social group or groups. Generally speaking, at the present time pollution reduction has social approval. Therefore, this factor would contribute to the relationship between attitudes and behavioral intention. Situational factors that contribute to the relationship would include such variables as the time dimension, the availability of disposal units, and induced resistance to change [5]. It should be pointed out that a change in behavioral intention is not the same as actual behavior. Actual behavior is a function of behavioral intention and various nonpredictable situational factors [8]. It should be mentioned, however, that actual behavior and behavioral intention often have a high correlation [4, 8].

In conclusion, the value of this study to those interested in conservation is that it suggests that one form of behavior, namely littering or pollution, may be controlled. Granted this was only an exploratory study and one should not generalize, yet it indicates that attitudes can be measured and changed and that attitudes and behavioral intention relate.

Summary

The subject of attitude change was investigated in this study. A message that involved belief reduction was constructed and administered to the respondents. Attitude changed significantly. It was surmised that the attitude change came about as a result of the desire of the subject to maintain cognitive consistency. Attitude change was also linked to behavioral intention change. The theory of cognitive consistency was also used to explain this latter linkage. In explaining the attitude-behavioral intention interdependence, one may also consider the factors of reinforcement, referent behavior, and various situational elements. In general, the study, even though it was exploratory, provided some useful insights on how attitudes and behavioral intention may be changed.

References

1. F. M. Bass and W. W. Talarzyk, "An Attitude Model for the Study of Brand Preference," *Journal of Marketing Research* IX (February, 1972), pp. 93-96.

2. L. W. Doob, "The Behavior of Attitudes," *Psychological Review* LIV (March, 1947), pp. 135-156.

3. M. Fishbein, "Attitude and the Prediction of Behavior," *Readings in Attitude Theory and Measurement*, ed. M. Fishbein (New York: Wiley, 1967), pp. 477-492.
4. M. Fishbein, "The Search for Attitudinal-Behavioral Consistency," *"Behavioral Science Foundations of Consumer Behavior*, ed. J. B. Cohen (New York: Free Press, 1972), p. 250.
5. A. G. Greenwald, "Behavior Change following a Persuasive Communication," *Journal of Personality* XXXIII (September, 1965), pp. 370-391.
6. C. A. Kiesler, B. E. Collins and N. Miller, *Attitude Change* (New York: John Wiley and Sons, 1969).
7. W. J. McGuire, "The Current Status of Cognitive Consistency Theories," *Cognitive Consistency*, ed. S. Feldman (New York: Academic Press, 1966), pp. 1-46.
8. J. N. Sheth, "An Investigation of Relationships Among Evaluative Beliefs, Affect, Behavioral Intention and Behavior," *Consumer Behavior: Theory and Application*, ed. J. U. Farley, et. al. (Boston: Allyn and Bacon, Inc., 1974), pp. 89-114.
9. H. C. Triandis, *Attitude and Attitude Change* (New York: John Wiley and Sons, Inc., 1971).
10. J. Vedder, "Program Evaluation and Research Methods—Class Notes," unpublished paper.
11. W. L. Wilkie and E. A. Pessemier, "Issues in Marketing's Use of Multi-Attribute Attitude Models," *Journal of Marketing Research* X (November, 1973), pp. 361-375.

WHY ENVIRONMENTAL ORGANIZATIONS FAIL TO EDUCATE

Gerald Schneider

Environmental Consultant, 1520 Gridley Lane, Silver Spring, Maryland 20902

Continued degradation in environmental quality suggests that environmental education has been largely unsuccessful. Educational efforts of environmental organizations have failed by concentrating on content and neglecting educational processes: relying on information alone to alter behavior, confusing education with propaganda, and confusing conflicts of special interests with public concerns. Corrective strategies include greater public involvement in environmental decision-making, separating special interest from public environmental concerns, seeking voluntary lifestyle change to achieve objectives of environmentalists through behavior examination, and more personal contact between environmental organizations and the public.

SYSTEMS' APPROACH: A VALUE ORIENTED "GOODS, SERVICES AND EFFECTS" APPROACH TO ENVIRONMENTAL USE

Gilbert Banner

Environmental Consultant, 32 West Main Street, Cortland, New York 13045

Environmental education requires a viewpoint that recognizes the importance of process and dynamic relationships without which environmental problems cannot be understood. This dynamic and holistic viewpoint, often called an ecological approach, recognizes the changing relationship of things over time.

In the larger scientific and humanistic knowledge areas, academic specialization has created difficulty in viewing problems in their entirety and has developed a communication problem that makes interdisciplinary cooperation difficult.

There is developing a new viewpoint, general systems' theory, to help bridge this communication gap as well as supply a framework for a more holistic viewpoint of man's knowledge and problems.

This paper presents an approach to man's use of resources, a "Goods, Services and Effects" approach that is holistic and dynamic and consistent with the general systems' theory viewpoint. At the same time, general systems' theory provides a framework for a taxonomy or set of categories of environmental concepts. Concepts of resources use is one category. Thus, this paper has three parts: an introduction to some principles of general systems' theory, categories of environmental concepts consistent with general systems' theory, and a "Goods, Services, Effects" approach to environmental education or resources use problem solving.

It is hoped that this framework will be helpful to teachers and curriculum workers by providing a rationale that helps communication across discipline lines.

A general systems' theory orientation toward environmental education may help educators organize the many environmental concepts and the "overkill" of environmental materials and information. There is a communication problem created by the many specialists' viewpoints on environmental matters.

Environmental problems are a mixture of bio-physical and social relations and processes in a human values setting. Each specific problem has its own unique mixture of parts whose importance or relevance to the whole and to each other varies as the boundaries of the problem change under different perspectives. The problem itself can be changed or defined differently as the viewpoint changes.

A wet area, a mixture of open water, marsh and swamp, a few blocks from the center of a city may be seen simply as a complex of bio-physical interactions and processes with a given physical boundary. Its systems or parts have a specific importance when this area is seen as an open water surface to be saved from development. Its parts are different when viewed as a combination of water, marsh, and swamp for a biology class study area. It is different and more complex when viewed as a mixture of wet area and dry, whose potential can be developed both for school use and public education and recreation because of its location near the center of the city.

The same bio-physical aspects of the area take on different values if the area is considered only for a single school's use, for use by the entire school system, or as a regional environmental center for a larger area. It obviously has additional values as part of the city's recreational facilities. Each change in potential use of the area changes the relative importance of the parts.

Each discipline or profession separates out those parts the specialists consider their territory of knowledge and competence. They often take as given the human value setting of the problem. The solutions they offer to the problem are only appropriate to the problem as they have defined it.

The educator may find helpful, then, an approach that is holistic and that puts emphasis on relations and interactions of the parts—an approach that emphasizes defining the boundaries of the problem and raises always the question of potential uses and values, and the effects of choices.

The scope of environmental education extends from consideration of specific local needs such as local citizen awareness about meeting minimum quality standards for air, water and waste disposal in their community, to the philosophical speculation on the meaning of "quality of life concept." This scope includes consideration of value systems, criteria for the design of quality environment, speculation on appropriate population numbers and appropriate population location relative to resource potentials, and methods of measuring the effectiveness of the human environmental design by public health standards, both physical and psychological.

The educator goes a step further. He asks how to teach the above while considering the developmental sequence in learning.

There is general agreement that environmental problems must be viewed in a holistic manner;that is, one must consider all the interrelated factors that are relevant to an environmental problem. There is no question that environmental problems are broader than the traditional academic disciplines and professions. At the same time the specialized expertise of these disciplines and professions is required for problem solving and environmental design.

A comprehensive viewpoint or framework is required within which limited or restricted expertise can be holistically oriented or coordinated and also a framework within which limited or restricted problems can be oriented to the larger environmental design. A "systems' " approach offers this broad framework, one that can lead to holistic understanding.

Human perceptions simplify the complexity of the universe by a breakdown into parts or things. The systems approach is a viewpoint or ordering of these things, seeing the total environment as made up of systems and their environments. It emphasizes the interdependence of parts, the holistic nature of the universe and the human use of this universe.

Environmental concepts offered to the educator are many, and at different levels of sophistication and complexity. Each discipline has its own lists, specific to the discipline's viewpoint, of environmental issues. Each discipline has its own levels of abstraction, required by its areas of interest and research. These different viewpoints pose the problem of communication amongst the disciplines themselves as well as between the disciplines and the educator attempting to fuse these viewpoints. For teaching and curriculum construction the same comprehensive framework or viewpoint that is needed for general understanding is also required if the educator is to translate these concepts to different age levels, teaching conditions, subject specialization, etc.

While teachers or schools may prefer not to stress or offer systems' approaches as such, what is offered in environmental education should be consistent with the nature of the universe and the nature of environmental problems.

The term "system" is used in many ways. We will use the term to describe units of organization of materials, energy and information. Each unit or system has an "environment," that which affects or is affected by the system.

We are concerned with the place of humans in the universe, first as a biological species, and with the survival of the species, and then we are concerned with the human condition of "well being" or "happiness." The quest for quality environment is a human-created value or goal-seeking behavior. To avoid the issues involved with human frailty, we will assume a value judgment that all human kind is one and should survive as a species, and that all humans should share equitably in whatever good life is possible. Our orientation then is toward the human use of the universe, the environment that humans must adapt to, or change or create to maintain "quality living" or "happiness" beyond mere survival.

With this human orientation, we will define systems, general systems' theory, a general systems' viewpoint, and the relevance of this viewpoint for environmental education.

System

A system is a describable set or number of parts or things that interact or have special relations such that the whole has qualities different than the component parts. To define or describe a system implies the ability to describe the boundaries of the system. We can separate the system from its environment, or surroundings that are relevant to the system, by defining "environment" as the surroundings of the system from which and to which energy, matter, or information pass across the systems' boundaries. We define a specific system and its environment by including all that affects or is affected by this energy, material or information transfer across the system's boundary. Both a system and its environment are defined by human thinking for human purposes, and can vary as the human perspective varies.

General Systems' Theory

General systems' theory or organization theory is the body of principles or commonalities underlying all organization of energy, matter and information. The universe is viewed as a process of organization of interacting parts, little systems combining to become more complex systems, etc.

The purpose of general systems' theory is to develop these principles or characteristics of systems so that this commonality will help communication across lines of interest. It is assumed that common understandings will aid

research and policy to more productive ends.

At the same time that general systems' theory has been developing and with mutual interaction, there has occurred the development of cybernetics, systems' analysis, information theory, etc., the development of quantifying techniques and computer simulation and their application in research and problem solving.

We are concerned in this paper only with the general systems' viewpoint, not these quantifying specializations and their techniques.

We are not concerned in this paper with systems' delivery; that is, the specific social systems that have evolved or have been invented to satisfy human needs, such as the political and economic systems, the delivery of health services, education, etc.

How does the systems' viewpoint differ from the "Ecological" approach? In one sense there is no difference. Some ecologists have a systems' viewpoint before general systems' theory developed. They were concerned with the dynamics of natural and social systems and had an holistic viewpoint toward environmental problems and environmental resources. They saw energy and time and the quality of the environment as basic considerations. They saw the conflict between population numbers and quality of life, the problem of exponential growth. They were environmentalists ahead of the times.

For most people, however, the ecological approach means recognition of interdependence of the biophysical and social forces, the "Web of Life" idea. But it is geared mostly to the human effects on the natural environment. Most people recognize pollution problems in urban affairs, but do not usually consider social problems and even less do they consider the psychological environment of the individual.

A general systems' approach goes beyond the biophysical aspects of the environment and includes the social and psychological systems as well. Fundamentally, it views the universe as made up of systems and their environments described or defined for human understanding. It emphasizes boundaries of systems and of environments. This viewpoint is more conducive to a holistic view of human problems whether they are those of the biophysical environment, the social or cultural environment or the individual or psychological environment. Implicit in a total approach that considers social systems is consideration of value systems. The emphasis on systems means emphasis on system boundaries. The emphasis on social systems raises the questions of purpose, goals and values.

Environmental understanding and problem solving must be as holistic as environmental problems are holistic. Yet most sources of information are not holistically oriented. The education of most teachers has been specialized and is fragmented. This is the result of the following historical conditions:

First, the academic and professional world is specialized in interests and research.

Second, the public agencies with an interest in environment have specific and limited responsibilities and interests.

Third, private industries and organizations in the political and economic market place promote their limited interests.

Fourth, in all these groups, the individual members hold a wide range of political and economic beliefs which affect the definition of environmental problems, affect what is considered relevant data, affect what are considered acceptable solutions. The groups as groups, present a wide spectrum of beliefs.

This varied information is presented to teachers who themselves are the product of the same fragmented and specialized knowledge and training. Teachers also have a wide range of political and economic preferences. Teachers also have a wide range of educational philosophies and learning theories. Thus, each teacher has a unique individual viewpoint which acts as filter for the information "Overkill" cited above.

Finally, the teacher as an individual must communicate with peers who also are trained specialists who have had equally individual exposure to the information and knowledge indicated.

The end product, the educational experience offered students, can only be as relevant as the framework of ideas used to construct this educational experience. Evaluation of the curriculum materials and experiences offered, evaluation of the materials available from the many sources listed, and evaluation of the student end product, what has been learned, can be no more relevant than the same framework on which all have been constructed.

A general systems' theory or organization theory viewpoint can help organize this overkill of information and help evaluate materials and learning experience for holistic relevance. Again, I stress we are interested in a viewpoint toward the universe around us, a viewpoint that will help communication across all these specialized lines listed. We are not concerned with the quantifying tools and techniques required for systems' analysis and computer simulation, methods that some disciplines are using effectively in research and problem solving. General systems' theory underlies these techniques, and helps understand what these specialists are doing, but our primary interest is with a viewpoint that will help communication across the many boundaries of knowledge and expertise that exist.

General Systems' Concepts

The following general systems' principles are of two kinds. The first three underly all system organization and the following three are social system principles underlying the human use of the environment as resources.

(1) The universe can be viewed as a set of systems. A system is an organization of parts having a structure or order such that the whole has qualitative differences from the quality of the parts. These qualitative differences are due to the interaction or relationship of the parts and in this sense a system is more than the sum of its parts. A system, as an organization of energy, matter and information can be described at a moment in time, or as a process over time. That a system can be described or defined implies boundaries that can be described, across which energy, matter, and information can move to and from the surrounding environment.

(2) The universe can be described as a hierarchy of systems. Systems have evolved to different levels of complexity by the interaction of existing systems over time. This complexity has reached a point where living systems have become self-regulating and self-adapting to changes in their environments as well as changing the environment.

Human social systems have evolved still further and can be described as goal-creating as well as goal-seeking systems.

In the biophysical systems the hierarchy of complexity appears organized or can be described as systems made of sets of simpler systems. This box within box or inclusion principle of organization; atom, molecule, living cell, living species, forest, etc., describes an increase in complexity along with an increase in system instability, with greater adaptability to environmental change.

Living systems have evolved mechanisms for survival and can be called purposive systems in the sense that this complexity has achieved adaptability through the genetic machinery for those systems that have survived.

Social system hierarchy, once past the biological level of the individual and breeding group, does not follow the inclusion of principle.

Social system hierarchy exists, but not in the sense of determinate sets of levels. There exists, on the biological

level, individual genetic coding for individual development and some group behaviors; however, adaptation to changing environment, both human organizational change, and change of the environment, are not genetically determined but culturally and/or humanly invented.

(3) Living systems have developed "feedback" mechanisms for maintaining steady states or for changing the system to adapt to changes in the environment. Social systems can invent these mechanisms as well as deliberately change the environment to meet social system goals. If the adaptation mechanism cannot change the system as fast as the environment changes, the system may be disrupted or destroyed.

(4) The biosphysical systems of the universe are the life support systems for the human species. We look at these systems as resources for human use. If complexity of systems has lead to survival effectiveness, then the human standard of measurement for optimum complexity of living systems is that system which provides the largest energy or material conversion useable or harvestable, and maintainable over time for human use.

(5) The social systems or organizations are human inventions for surviving in the Bio-Physical environment. We can measure the effectiveness of human social organization by its movement toward goals determined through human invented value systems. If the goals are "survival" and "happiness," then the maintenance of the natural bio-physical support base and the creation of human environments that can lead to "happiness" are the minimum measures of effectiveness.

(6) Problem solving or design must consider all relevant systems. Systems have boundaries, naturally determined or evolved in the bio-physical systems, man-made in the socio-cultural systems. It follows that designing, planning, or problem solving must understand the interrelationship of systems and sub-systems, so that all systems and parts, are considered that are within the problem boundaries. An understanding of the relationship of the part or systems involved in the problem may determine the relevant boundaries of the problem.

Categories of Concepts

The array of concepts presented to the educator varies in language, complexity and level of abstraction. It is desirable that a comprehensive set of categories be available as a checklist so that teaching experiences cover the wide variety of areas involved in environmental problems. The following categories are consistent with general system theory:

(1) General system concepts: these have been covered (Interdependence, web of life, life support systems, quality environment, community, identity or personality, etc.).

(2) Resource inventory: descriptive state of different aspects of the Earth system as resources of use to man (Geologic and geographic heterogeneity of Earth's bio-physical systems, climate, minerals, land and water masses, etc.).

(3) System dynamics: process of change, growth and development, etc. (Entropy and negentropy, input and output, feedback mechanisms, kinds of systems, etc., ecological succession, productivity, disruption.).

(4) Living system requirements: Individual, species, group, etc. (Needs, tolerances.).

(5) Social system requirements: Community. (Needs, habitat, property.).

(6) Individual human requirements: Identity, integrity. (Individual development, creativity.).

(7) Values and value changes: Imperfections or desired changes of goals or of institutional arrangements of political and economic systems. (Social responsibility, stewardship, future generations, etc.).

(8) Resource use concepts underlying design or planning or problem solving (To be expanded in next section.).

(9) Systems' delivery: Policy, administration and management concepts (Criteria for quality environment, environmental impact, technological assessment; carrying capacity, etc.).

Environmental Use Framework

From a systems' viewpoint the environment is the system's surrounding area with which it interacts. Since we are looking at the human use of the environment, the terms environment and resources can be interchanged. The system we are defining, then, varies from that of an individual to all human kind, and the environment varies from the perceptions of an individual through ever increasing spatial areas to the entire useable universe.

It is helpful to divide the environment into three major sub-sections to see Man's place in the whole and how man uses the environment. Each of these three parts has sub-parts with their own set of concepts.

(1) Bio-physical systems; Life support systems required for man's survival from Man-use standpoint, energy, materials and space use.

(2) Socio-cultural systems; The interaction of man to man and to the environment to create and move towards goals of survival and individual happiness.

(3) Individual systems; The development of the individual within socio-cultural systems to unique potentials for individual happiness. This includes creativity and social responsibility.

The bio-physical systems need no breakdown here. Most work has been done in determining the systems and their interrelations.

The Socio-cultural system can be divided into three parts:

(1) The existing culture or cultures; value systems, behavior patterns, institutions and control mechanisms. We have to recognize the present state of things. For understanding change, we must know what has been and what could be, but action must start from what conditions presently exist.

(2) The political system; the process of group decisions maintaining or changing parts, 1 and 3. (Objective of freedom and justice.)

(3) The economic system; choosing resource uses and distributing the results. (Objective, equity and efficiency.)

For simplification, we may say we have a two-part economy, a public and private sector, the public sector making decisions by the vote (part 2) and the private sector making decisions by dollars in the market.

The interactions of the three systems determine resources or environment uses.

"Goods Services and Effects" Framework for Use of the Environment

Man lives in and uses the environment. In this sense environments are resources for man. Resources are the parts of the environment that man has use for and can use. While he uses and changes or destroys some resources, he creates others. From the use of any environment we get goods and services. With the choices of use we get disservices or effects. (The economist's goods and bads, or benefits and costs, externalities, pollutions, etc.)

(1) Goods are the material things removed or movable from an environment. (Food crops, logs, nuts, mined minerals, oil, gas, etc., water for use elsewhere.

(2) Services are the uses of the environment for its own characteristics.

a. Productive services. The environment may produce crops to be removed as goods. (Forest for wood, game, nuts,) (grassland for game, meat, etc.), (soils for agriculture crops,) (lakes or streams for fish, beaver), (water for irrigation.)

b. Protective use. Water supply, habitat for biological forms, buffer for park.

c. Recreational use. Forest for hiking, snow-mobiling, natural history study.

d. Research use.

e. Aesthetic use, scenery, wild experience.

f. Preservation for own uniqueness. Historical relics, wonders of nature, as Grand Canyon, or redwoods, etc.

g. Use as space for man's artifacts, Dams, reservoirs, roads, cities, airports, harbors, etc.

(3) Disservices, effects or cost of use. These are the effects on the environment or on other environments (or systems) that limit or damage their potential uses, or continuation of the system.

a. Natural disservices such as fire, storm erosion, flood that should be recognized in use of an environment. This implies recognition of system variations such as climatic and weather changes, etc., over time.

b. Man-aggravated natural forces due to use. Increased flood damage due to increased run-off and artifacts in flood plain, increased erosion, upset of bio-systems by control measures, etc.

c. Man-invented pollutions, radiation, nondegradable chemicals, etc.

d. Loss of potentials where choices are irreversible, extinction of species, eco-systems, etc., or where costs are prohibitive, airport from prime forest or agriculture land.

e. Economic and political decisions that damage community or human habitat as well as individual health and psychic well being.

f. Individual decisions that affect the potential of individual.

Concepts of Use of an Environment

The use of an environment can be any mix of goods, services, and effects. The following concepts should be considered in evaluating the appropriateness of the choices made by man. These concepts underly problem solving on environmental issues. They underly the concepts of environmental impact and technological assessment.

(1) Many uses, whatever its present state or condition. An area or environment has many potential uses for goods and services. A forest can be used as forest or farm or airport.

(2) Intensity of use relative to natural systems. The choice of use may leave the environment as it is, or develop or change aspects of the environment from natural systems to completely man-made artifact. An area that is a natural forest system can be changed to soil productive crop systems, and with increasing use of fertilizers and chemical controls and irrigation to hydroponics. The same forest can be converted to urban use and this to increasing numbers of people per unit space, etc.

(3) Compatibility of uses. Potential uses are mutually compatible to incompatible. A redwood forest cannot be used both as natural cathedral and source of matchsticks. A river can't be both sewer and trout stream. A forest can produce trees and be used for hiking; a stream can produce fish, and be a source of drinking water, etc.

(4) Multiple use. Depending on the degree of compatibility of potential uses, the area or environment may be used for several resources of goods and services at the same time; e.g., forest and recreation, lake for fishing, boating and swimming.

(5) Priority of use. Because of incompatibility the potential choices of use must be based on a hierarchy of values for use. Stream floodplain for flood control, farming, park, junkyard or factory. This priority also is a function of system size and the total values of the system. A unique environment may be unique from international, national or local level, (ocean beaches, estuaries).

(6) Substitutability. Choices of hierarchy value depend on scarcity of a particular resource or environment, irreversibility of use, and substitutability of resources. Is the resource used as a means or an end? A redwood forest as a means, provides wood for matchsticks. There are substitute materials. A redwood forest as an end, is trees for inspiration. They are unique and once gone cannot be replaced for many generations. There is no substitute. They are unique not only on the west coast but for the world.

To make choices, by whatever political or economic system, requires an inventory of potential resources or environments. This changing potential determines potential objectives.

This introductory framework is consistent with a systems approach to problem solving or design and should be helpful for understanding and teaching environmental knowledge. Hopefully it is a consistent framework to which can be added information from the many academic disciplines, especially the social sciences.

ENVIRONMENTAL STUDIES: A BLACK BOX (MISSOURI ENVIRONMENTAL STUDIES PROGRAM)

Dean A. Rosebery

Professor of Biology, Science Division, Northeast Missouri State University, Kirksville, Missouri 64501

The Science Division of Northeast Missouri State University has provided active instruction in Environmental Studies for 495 teachers. The utilization of Environmental Studies materials from the American Geological Institute has provided a mechanism for moving from a more traditional classroom operation into learning situations based more on the psychological principles of Maslow and Rogers. The involved teachers and students were evaluated by the same tests as those administered by the evaluators of the Environmental Studies Program at Boulder, Colorado. The sampling of 62 teachers indicated that the average utilization of environmental studies assignments was 27.8 per year. The number of self-constructed assignments given that were of the environmental studies type was 34.1.

In another sampling of 78 teachers, an average of 26 environmental studies assignments and 12 self-constructed environmental studies assignments were given to students.

The conclusion is that the program has been a success in terms of teachers incorporating the study of the environment within their existing curriculum. To many of the teachers, "ES" has become a way of life.

VALUES–CLARIFICATION STRATEGIES AS A MEANS TO OPEN COMMUNICATION BETWEEN COLLEGE STUDENTS AND THE URBAN COMMUNITY

Mary Lynne Bowman

Assistant Professor, Division of Environmental Education, School of Natural Resources, The Ohio State University, 124 West 17th Avenue, Columbus, Ohio 43210

Currently, there is little argument that the attitudinal-value realm is a consideration of the environmental educator. The question seems to be one of "how" rather than "if" one should work with values in the classroom.

Although there are numerous publications which include classroom strategies for working with values, few guidelines are available as to how to interrelate these techniques in a meaningful way with the specific objectives of an environmental program. It is relatively easy to present to students—from existing materials—the theory of value clarification, the impact a given set of values has had historically in the processes of making decisions, and the processes of participating in values clarification activities.

From this point on, the road becomes muddy. Assuming the students have dutifully participated in a values clarification activity, how does one relate this experience to the content and objectives of an environmental education course? The nature of values activities can lead to extremely emotional and personal student statements creating situations that almost demand some sort of follow-up; yet only vague references are made to the role of the teacher/leader upon completion of most values-clarification strategies. How does the typical teacher, with a limited background in psychology, turn the theory of values clarification into practice?

The purpose of this statement is to describe a project that illustrates a use of values clarification in the classroom to accomplish specific goals of an environmental education course.

The ideas presented are an outgrowth of a growing concern that existing environmental education programs seem limited in urban areas. Discussions with departmental colleagues, in-service naturalists, and public school environmental educators disclosed difficulties in working with city-bound residents. Reports from metropolitan park naturalists stated that, although a great number of park users were urbanites, the city dwellers (and in particular, blacks) were participating only on a limited basis in established park programs. They preferred to use the shelter houses and recreational facilities rather than nature trails and centers. Teachers were also reporting difficulties in motivating urban school administrators, parents and students to include environmental education in the curriculum.

In an effort to respond to these situations, faculty within Ohio State's School of Natural Resources began reviewing the environmental education program and sharing observations to try to identify ways in which we might better understand and assist in solving the problem. We compiled the following information we felt might somehow be related.

(1) Current Natural Resource student enrollment data at Ohio State disclosed that the vast majority of students were from rural and suburban communities. (University Enrollment Data, Robert Henne, SNR School Secretary.)

(2) Ohio State's School of Natural Resources philosophy of environmental education includes urban concerns, but none of the course offerings specifically focused on urban environmental education.

(3) Although several departments on campus offer course work focusing on some aspect of urban concerns, few Natural Resource students were choosing to enroll in them. Those that did were not overly enthusiastic as to the applicability of these courses to environmental education.

(4) Initial survey data from a dissertation effort that assessed college students' attitudes toward environmental issues (Bowman, 1972) indicated that Natural Resource students' concepts of environment seemed to exclude urban areas; they thought of environment as being scenic, aesthetic, or "nature" oriented.

(5) Individual conferences with current students revealed that they realized they might be working within the urban perimeter upon graduation and were uncertain how they could begin to relate to urban people and their concerns. Some even expressed fear.

Since I had served for the past year as an educational consultant to Head Start Programs in Region V of the Office of Child Development, I was able to compile an additional list of observations from my experiences that might provide insights from a different perspective.

(1) Discussions with urban Head Start personnel indicated they viewed the environment as being nature-oriented, environmental education as being restricted to nature-study, and did not consider this type of program relevant to their curriculum. In contrast, most rural areas already had some sort of environmental education—usually outdoor education—built into their curriculum components.

(2) Although many of the urban programs were located near universities and colleges, there was a reluctance to enter into any sort of cooperative arrangement with university personnel on any matter. (It should be stated that this negative attitude toward involvement with universities was also true in rural programs.)

(3) Repeated requests for consultant service from a local urban Head Start Program gave me an opportunity to conduct in-depth discussions with a variety of people from this urban area. Some sort of "trust" relationship had developed between us enabling us to work together in an open, genuine manner. It was explained that reluctance to work with "outsiders" stemmed from previous experiences which, in the view of Head Start personnel, had resulted in "people coming in and trying to use us to fulfill their own needs." However, on further questioning, it became apparent that the Head Start people recognized the need for assistance in developing their goals and curriculum plan, but were not able to identify their specific areas of concern. Furthermore, previous consultants had not been

successful in assessing the needs of the program. Briefly, the Head Start people felt they needed help but didn't know what they needed help with and resented suggestions that did not come from within their own organization.

From the above "bits and pieces" it was observed that repeated patterns existed that seemed to correspond to systems discussed in existing literature on values clarification; more specifically, the Head Start people seemed to need direction in "thinking through their values in order to assess their own needs and decide on a plan of action utilizing their new knowledge" (Simon, 1972, p 21-22.)

On the other hand, Natural Resource students seemed to need exposure to the diversity of attitudes and values systems that can exist in today's society and to develop an awareness that the success of their program may, at least in part, depend upon their skill in allowing their "clientele" to "think through their own values and weigh the pros and cons and the consequences of various alternatives" (Simon, 1972, p 20.)

Although Natural Resource students had been exposed to values-clarification strategies, no one had attempted to demonstrate ways one can utilize values responses to develop a plan to meet specific needs of a specific group. Students tended to try to indoctrinate others to think as they did about environmental concerns without trying to understand the values that other people might hold, and working from that point in providing their service.

It was also recognized that we faculty in the School of Natural Resources were in fact guilty of the same type of methodology. We had been devoting our energies to the teaching of empirical environmental management concepts and assuming that our students would not only come around to our way of thinking but be able to "spread the gospel" successfully in their future work. This plan apparently was having moderate success with people whose attitudes and values were similar, but was in trouble in areas where social-cultural needs differed. Attitudinal differences between the interpretive worker and/or environmental educator and his audience seemed to lead to a lack of communication and loss of effectiveness in the environmental program.

The remainder of this statement is an accounting of the implementation of a Natural Resource course offering specifically designed to provide the student with diverse experiences to:

(1) Increase his ability to recognize the social, economic and political factors which can affect the urban dweller's attitudes and values toward the environment.
(2) Develop skill in assessing the urban dweller's special needs.
(3) Develop skill in setting program objectives to meet these needs.
(4) Implement an environmental program in the urban community.

Help in choosing appropriate readings was enlisted from the Head Start personnel. They also volunteered to serve as an experimental group for our students.

Values-clarification strategies were employed in both groups for comparative analysis.

It was discovered that both groups were very similar in their responses to Roth's (1969) traditional success strategies and generally fit within his recorded percentages of people polled. A major difference on Question 5 emerged in responses to Simon's Personal Coat of Arms as follows:

> Natural Resource students tended to choose to live in a natural setting if they had but one year to live and were granted success in whatever they chose to do.
>
> Head Start people predominantly chose to further their education and help poor people.

The overall analysis of the Personal Coat of Arms strategy showed that Head Start people tended to be more home and community oriented than did the Natural Resource students.

In an effort to clarify any misunderstanding referring to concepts of environment, the Natural Resource students designed a questionnaire that was to elicit responses on "what one thinks of when he hears the word 'environment'." A survey was conducted in two separate areas—one surrounding a pre-school center in the inner city, and one surrounding a day-care center in a nearby wealthy suburb. Responses were categorized using the Q-Sort technique described by Walker and Lev (1943) which requires consensus on placement of responses and eliminates those responses or categories in which some consensus was not reached. A panel was used to place responses in the following categories:

(1) People, social, economic condition. (Friends, family, neighbors, social conditions, churches, home, etc.)
(2) Physical plant. (Buildings, streets, city services, dogs, proximity to schools and stores, etc.)
(3) Nature. (Green space, trees, pollution, unpopulated, scenic, parks, etc.)
(4) People and physical plant.
(5) Don't know.

Results indicated that inner-city residents tended to think of environment as being "people oriented"—that is, home, family, neighbors, services, schools, etc., while suburbanites viewed environment as being "nature oriented"—i.e., trees, yards, aesthetics, etc. It should be stated that the students became aware and announced that they believed their concepts of environment were more closely related to those of the suburban area.

Since there were some differences in concepts of environment between the two groups, it was hypothesized that these differences might result in differences in priorities or sets of values in relation to environmental concerns. The students then embarked on a plan to identify the goals and objectives of the Head Start Program. Simon's Coat of Arms strategy was modified to clarify program values by changing the six questions to the following:

(1) What is the main service you are trying to provide to the Head Start child?
(2) What do you think your program does best?
(3) Who are you trying to reach through the Head Start Program?
(4) What one thing would you like to see done to improve your program?
(5) Symbolize the optimum environment for your program.
(6) What three words would best describe what you would like to be said of the Head Start child?

This modified version of the Coat-of-Arms strategy was utilized as a group effort in both of the participating urban centers. From the responses, a general philosophical statement was developed which indicated that the main objective of their programs was to help the child and his parents relate to and cope with his immediate environment and to encourage the development of a positive self-image. "Health and safety factors" were frequent responses.

Since health and safety are also of great concern to the environmentalist, we now had a common meeting ground. Emphasis was placed on these factors rather than on the traditional approach which had been one of redefining the environmentalists' concern and pre-determining of the content of a specific environmental program.

As a result of this new emphasis, it was discovered that one of the foremost concerns in one of the centers was the lack of a playground area for their pre-school children. The nearest park was located seven blocks away and all routes to it were through highly congested traffic areas. The Regional Office of Child Development had informed the Center that a failure to provide adequate playground facilities by September would result in nonrenewal of Federal funding to the program. There were two vacant lots in the immediate vicinity of the Center but they were overgrown with weeds and being used primarily as a dumping ground by the community. Since they were owned by the Catholic School that rented their facilities to the Head Start Program, it was possible to develop either or both lots into the desired recreational area.

Since this type of project lent itself to the range of the Natural Resource students areas of concerns and abilities, and the Head Start people were in need of expertise as to how to proceed, we had a ready-made project to allow the two groups to work together to achieve a specific environmental goal "(to become) aware of an environmental problem and management alternatives of use in solving these problems: and motivated to work toward the maintenance and further development of an environment optimum for living." (Modified from Roth, *et al.*, 1969.)

The specific project to develop a playground area in the immediate neighborhood of the Head Start Center is not yet completed. The two groups have gained financial support from several community agencies and have developed a plan which includes the two previously mentioned vacant lots, proposed placement of playground equipment, various plantings to add to the aesthetic quality of the areas, and a land-lab to be used for outdoor education with both Head Start children and the parochial school children who share the same building facility. The project will continue in the Fall.

Admittedly, Natural Resource students were more interested in cleaning up the lot, proposing plantings, and developing the land-lab than were the Head Start personnel. Head Start people placed priority on the playground equipment. However, as a result of the values-clarification strategies, these differences were recognized from the beginning of the project and did not result in conflict between the two groups. Neither group insisted on changing the other group's priorities; rather, they worked together through their commonalities in an effort to achieve a goal that was ultimately desired by both.

At the end of Spring Quarter, evaluations from both groups disclosed feelings of satisfaction and pride in their efforts—particularly the success in opening communication between groups that had not previously been able to identify with each other.

Bibliography

Bowman, Mary Lynne Cox. "The Development and Field Validation of an Instrument to Assess College Students' Attitudes Toward the Determinants of Environmental Issues." Unpublished Ph.D. dissertation, The Ohio State University, 1972.

Glasser, William. *The Identity Society*. New York: Harper & Row, Publishers, 1971.

Mead, Margaret. *Culture and Commitment: A Study of the Generation Gap*. Garden City, New York: Natural History Press/Doubleday & Co., Inc., 1969.

Noreen, Robert G. and Graffin, Walter, Editors. *Perspectives for the 70's*. New York: Dodd, Mead & Company, 1971.

Roth, Audrey. *Success: A Search for Values*. New York: Holt, Rinehart and Winston, Inc., 1969.

Roth, Robert E., Pella, Milton O., and Schoenfeld, Clay O. "Environmental Management Concepts—A List." *Technical Report No. 126*. Wisconsin: Research and Development Center for Cognitive Learning, April 1970.

Ryan, William. *Blaming the Victim*. New York: Pantheon Books, 1971.

Simon, Sidney B. Howe, Leland W. and Kirschenbaum, Howard. *Values Clarification*. New York: Hart Publishing Co., Inc., 1972.

The Ohio State University Enrollment Data Bank, Robert Henne, School of Natural Resources, Secretary.

Walker, Helen M. and Lev, Joseph. *Elementary Statistical Methods*. New York: Holt, 1943.

Wurman, Richard Saul, Brunner, Howard, and Donovan, Nancy. *A Guidebook to Guidebooks: An Urban Environmental Education Resource Book*. The Commonwealth of Pennsylvania, Department of Education, 1973.

THE 21ST ANNUAL BUSINESS MEETING

August 14, 1974

1. The business meeting was called to order by CEA President Jane Westenberger.
2. The minutes of the 1973 Annual Meeting, as written in the 1973 Annual Report were presented. Cook moved, seconded by Roland Freibig that the minutes be accepted. Motion carried.
3. The Treasurer's Report was presented as follows:

   Account with the University State Bank and Northern Savings and Loan of Green Bay, Wisconsin.

   Cash Income and Disbursement Statement

Cash on Hand (7/1/73)	$ 8,855.32
Add: Current Income	6,222.67
	15,077.99
Less: Current Expenses	7,582.38
Cash on Hand (6/30/74)	$7,495.61

Assets

	7/1/73	6/30/74
Checking Account	$1,282.27	$ 3.34
Savings Account	7,573.05	7,492.27
	$8,855.32	$7,495.61

"We have examined the accompanying statement of income and expense and related schedules of the Conservation Education Association for the period July 1, 1973 to June 30, 1974. Our examination was made in accordance with generally accepted auditing standards, and accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the aforementioned statement of income and expense and related schedules present fairly the cash position of Conservation Education Association on June 30, 1974 and the results of operations for the fiscal year then

ended, in conformity with generally accepted principles of accounting, applied on a basis consistent with that of the preceding year."

/s/ Kenneth E. Radtke
Certified Public Accountant

The Treasurer's Report was accepted as presented.

4. **Committee Reports:**

Publications—Report by Neil Jenkins. The latest CEA publication entitled "Environmental Conservation Education: A Selected Annotated Bibliography" has recently been published. The material was put together for the CEA under the direction of Dr. Clyde Hibbs, CEA member. CEA is currently promoting sales of this publication and would like to have its members urge its use whenever possible. Bulk sales would especially be welcome. Dr. Hibbs is currently working on a supplement to keep this new publication current.

Other CEA publication inventories are very low and only a limited number are available for sales. Inquiries may be directed to the Interstate Printers and Publishers, Inc., Danville, Illinois 61832. However, the Secretary does have a small supply of certain items at his UWGB address. CEA members were reminded that there is an automatic 10 percent educational discount on CEA items.

Discussion following the report revealed a desire by CEA members to receive a publication order form.

Membership Services — Report by Dean Bennett. A mail questionnaire had been distributed to CEA members and the complete report is available by writing Dr. Dean Bennett, 111 West Main Street, Yarmouth, Maine 04096. A summary of the report will appear in a forthcoming issue of the Newsletter.

The Committee will attempt to distribute four packets during the 1974-75 year and made an appeal to the membership to bring to the attention of the Committee materials suitable for the packets.

Membership — Report by John Hewston. A goal of 100 new members for 1974-75 was announced. We need to expand our membership base and an appeal to active members to sponsor students was made.

A new brochure is currently being put together for use in recruiting.

Alliance for Environmental Education, Inc. — Report by Robert Cook. The new Alliance for Environmental Education sponsored Earth Week, 1974. There was some confusion concerning the dates in 1974 because of another group sponsoring an Earth Day. However, this was to be corrected since the Alliance again wants to sponsor Earth Week, 1975. Over 2000 packets of informational materials from participating member organizations were distributed as a part of the Earth Week activities.

One activity encouraged by the Alliance is joint meetings of member organizations. In 1974 CEA meeting was held in the same city at the same time as the Soil Conservation Society of America, and the joint session held with that group was a high point for both participating organizations.

The Alliance has recently secured the services of a new Executive Director, Mr. Jack Snell, who is currently employed by the Indiana Department of Public Instruction as an Environmental Education Consultant. Mr. Snell will continue to work full time for them but will devote as much of his own time as possible to the activities of the Alliance. Mr. Snell's address is 1225 Country Club Road, Warsaw, Indiana 46580.

Report on the 1975 Conference— Report by Ira Bray and Bill Scruggs: the dates, August 17th to the 20th, 1975; to be held on the University of Florida, Gainesville Campus. The theme of the Conference will be "Education for Resource Use." A promotional film was shown and President Jane was presented with some Florida mementos.

Report on the 1976 CEA Conference—Report by Jim Unterwegner. The 1976 Conference will be held on the University of Portland Campus in Portland, Oregon. The theme will be "Education's Role in Land Use Planning." The Portland group promises to keep us informed as plans develop for this conference which will be held during the Bicentennial year.

Resolutions — A resolution was introduced by Lyndon Felton to write a letter to President Ford during the first week of his new administration indicating that CEA is willing to give all of its available support to the President in his new administration to help in furthering conservation and environmental education efforts throughout the nation and the world. The resolution passed.

Motion by Crowley, seconded by Ayers that the letter to President Ford be followed with copies to the new Vice-President and to the Cabinet as soon as these names are available. Motion passed.

Claude Crowley then introduced a resolution of thanks to the members of the State University of New York, College of Environmental Science and Forestry and to all of those who assisted in the 1974 Conference as follows:

"Whereas the State University of New York College of Environmental Science and Forestry has furnished CEA its hospitality and facilities for the 21st Annual Convention, and whereas faculty and staff have devoted a great deal of time, talent, and energy to perfecting the arrangements and program of this outstanding conference, and whereas conference co-chairman Austin Hamer and David L. Hanselman of SUNY College of Environmental Science and Forestry, and their faculties have given unstintingly of themselves to make the conference successful, be it therefore resolved that CEA documents its appreciation to SUNY CESF President Palmer, Austin Hamer, and David Hanselman by means of this resolution, and be it further resolved that a copy of this resolution be attached to letters to President Palmer, Austin Hamer, and David Hanselman as evidence of the appreciation of the CEA members and be it further resolved that the work and support of Dolores Connell and the many others of the College of Environmental Science and Forestry who helped with the conference is recognized and appreciated."

Resolution passed.

Election Report given by Robert Cook. Dean Bennett elected Vice-President and new directors for three year terms were Claude Crowley (reelected), Barb Horn and Dr. Herman Kranzer.

Clarence Billings then conducted installation ceremonies for newly elected director Barb Horn. Dr. Kranzer was not present.

There being no other business the meeting adjourned at 4:30 p.m.

CONFERENCE PARTICIPANTS

1. Jane M. Adams
1180 Chambers Road
125B
Columbus, OH 43212

2. Don Albrecht
1621 Connecticut Ave. NW
Washington, DC 20009

3. W. Rex Amack
3535 Pawnee Street
Lincoln, NB 68503

4. Edward J. Ambry
Montclair State College
Upper Montclair, NJ 07403

5. Eleanor Anderson
SUNY CESF
Syracuse, NY 13210

6. Susan Anghinetti
P.O. Box 695
Kennebunkport, ME 04046

7. William A. Armani
Veterans Administration Hospital
Syracuse, NY 13210

8. George R. Armstrong
SUNY CESF
Syracuse, NY 13210

9. Nancy J. Ayers
Susquehanna Environmental
Education Association
616 Pheasant Lane
Endwell, NY 13760

10. Richard A. Baer
1037 Gurney Drive
Richmond, IN 47374

11. James L. Bailey
Conservation Educational Service
2611 West End Avenue
Nashville, TN 37203

12. Gail Baldwin
211 Ledyard Avenue
Fayetteville, NY 13066

13. Mary Ann Banaszewski
R.D. #3
Naples, NY 14512

14. William Banaszewski
R. D. #3
Naples, NY 14512

15. Marjorie Banks
460 S. Salina Street
Syracuse, NY 13202

16. Gilbert Banner
32 W. Main Street
Cortland, NY 13045

17. Mary Barduhn
4600 Broad Road
Syracuse, NY 13215

18. Emory A. Bauer, Jr.
R. D. #2
Painted Post, NY 14870

19. Carl F. Baumgras
RT. #2 Box 72A
New Carlisle, IN 46552

20. Margaret Baumgras
RT. #2 Box 72A
New Carlisle, IN 46552

21. Ronald E. Beiswenger
2212 Rainbow Avenue
Laramie, WY 82071

22. Thomas Benjamin
Onondaga Nature Center, Inc.
Baldwinsville, NY 13027

23. Dean B. Bennett
111 West Main Street
Yarmouth, ME 04096

24. Virginia Benson
USFS
Washington, DC 20250

25. Janet Bessee
407 Maple Drive
Fayetteville, NY 13066

26. Richard Bessee
407 Maple Drive
Fayetteville, NY 13066

27. Clarence E. Billings
812 Boonville Road
Jefferson City, MO 65101

28. Ernest Bilquist
228 Broadhead Avenue
Jamestown, NY 14701

29. James L. Bilyeu
706 Albany Drive
Hermitage, TN 37076

30. Lila Bluestone
375 Bonnie Brae Avenue
Rochester, NY 14618

31. Holt Bodinson
NYS DEC
50 Wolf Road
Albany, NY 12201

32. Walter L. Bogan
U.S. Office of Education
1614 32nd Street NW
Washington, DC 20007

33. Robert Bonanno
15 Sharlene Road
Nutley, NJ 07110

34. Debbie Boots
Gates Road
Baldwinsville, NY 13027

35. Duane A. Bosworth
1915 N.W. 130th Avenue
Portland, OR 97229

36. Mary Lynne Bowman
Ohio State University
Columbus, OH 43216

37. Roger D. Braker
340 Lacombe Drive
Maumee, OH 43537

38. Terry A. Brandt
Dept. of Curriculum
and Instruction
Texas A & M University
College Station, TX 77843

39. Ira L. Bray
USFS Room 703
1720 Peachtree Road
Atlanta, GA 30309

40. Margaret Brock
Route 8
Hillsboro, OH 45133

41. Bernice Brown
335 W. Pleasant Street
Hillsboro, OH 45133

42. Larry Buell
Oliver Street
Petersham, MA 01366

43. John Bulger
Box 227
Pulaski, NY 13142

44. Phyllis S. Busch
Conklin Hill
Stanfordville, NY 12581

45. Rebecca Calvert
125 Lanewood Drive
Hillsboro, OH 45133

46. Ralph Campbell
R. D. #3
Naples, NY 14512

47. Marshall Case
2325 Burr Street
Fairfield, CT 06430

48. Leslie S. Clark
249 South Street
Concord, NH 03301

49. Martin L. Clark
2530 N.W. 12th Avenue
Gainesville, FL 32605

50. Peter D. Clark
613 Riversville Road
Greenwich, CT 06830

51. Bernard L. Clausen
Biology Department
University of Northern Iowa
Cedar Falls, IA 50613

52. Rod Cochran
SUNY CESF
Syracuse, NY 13210

53. Jean A. Colby
263 Colby Street
Spencerport, NY 14559

54. Samuel Combs, Jr.
801 W. 4th Street
Stillwater, OK 74074

55. Dolores Connell
SUNY CESF
Syracuse, NY 13210

56. Irene Y. Cook
5243 Oakmont Drive
Lyndhurst, OH 44123

57. Robert S. Cook
University of Wisconsin-Green Bay
Green Bay, WI 54301

58. William W. Coons
40 Remington Avenue
Ilion, NY 13357

59. Nancy G. Coy
704 W. Second Street
Watkins Glen, NY 14891

60. Marvin H. Cronberg
Rm. 303, Bell Bldg.
1603 Central Avenue
Cheyenne, WY 82001

61. Brenda Cross
Eastman-Kodak Co.
Rochester, NY 14650

62. John M. Cross
5829 Franklin Street
Lincoln, NB 68506

63. Claude D. Crowley
P.O. Box 6567
Fort Worth, TX 76115

64. George A. Cummings
581 Brunner Drive
Forest Park
Cincinnati, OH 45240

65. Michael Cunningham
City-County Planning Board
300 E. Fayette Street
Syracuse, NY 13202

66. Jack G. Davis
Ministry of Education
16th Floor, Mowat Block
Queen's Park, 900 Bay Street
Toronto, Ontario M7A 1L6

67. Mary Davolt
USFS
P.O. Box 937
Rolla, MO 65401

68. Earl E. Dawald
Geneva (Adams County)
Indiana 46740

69. Steve DeFoster
SUNY CESF
Syracuse, NY 13210

70. Douglas Dickinson
Outdoor Education Center
Antioch College
Yellow Springs, OH 45387

71. Alex Dickson
NYS College of Ag & Life Sciences
Fernow Hall
Cornell University
Ithaca, NY 14850

72. Martin C. Dodge
R.D. #3
Naples, NY 14512

73. David Dodwell
584 Via Rueda
Santa Barbara, CA 93110

74. John Dority
Bureau of Social Studies
State Education Department
Albany, NY 12143

75. Donald Dudley
5182 Bear Road
N. Syracuse, NY 13212

76. Isabel T. Duffy
USDA Forest Service
701 Loyola Avenue
New Orleans, LA 70113

77. Judy C. Egelston
1362 West Lake Road
Conesus, NY 14435

78. Andrew Eggers
SUNY CESF
Syracuse, NY 13210

79. Clifford E. Emanuelson, Jr.
Box 1162
Weston, CT 06880

80. Clifford E. Emanuelson, Sr.
Box 1162
Weston, CT 06880

81. P. T. Eubanks
RT. #3
Sumrall, MS 39482

82. Louise Evans
1678 Main Street
P. O. Box 84
East Windsor Hill, CT 06028

83. Richard H. Evans
Syracuse University
Syracuse, NY 13210

84. Robert L. Feldman
Department of Natural Resources
Fernow Hall
Cornell University
Ithaca, NY 14850

85. Nathan Fink
112 Carriage Drive
Chagrin Falls, OH 44022

86. Richard B. Fischer
16 Stone Hall
Cornell University
Ithaca, NY 14850

87. Michael J. Flitter
905 Washburne House
Witte Hall
University of Wisconsin
Madison, WI 53706

88. Jo Ellen Force
1839 Stanford Road
Columbus, OH 43212

89. Charles B. Ford
6227 Larchwood Avenue
Philadelphia, PA 19143

90. Thelma Belle Foster
P. O. Box 91
Hyde Park, MA 12136

91. Pamela A. M. Frazer
USFS Office of Information
517 Gold Avenue SW
Albuquerque, NM 87102

92. Robert W. George
9 Natural Resources Building
Michigan State University
E. Lansing, MI 48823

93. William E. Gibson
United Ministries
Anabel Taylor Hall
Cornell University
Ithaca, NY 14850

94. Robert F. Gift
600 Arch Street
Philadelphia, PA 19106

95. Warren C. Gilfillan
Multnomah Co. Intermediate
Education District
P.O. Box 16657
Portland, OR 97216

96. Michael L. Glenn
Environmental Protection Agency
Washington, DC 20460

97. Cary J. Goulard
College of Arts & Sciences
University of Northern Colorado
Greeley, CO 80639

98. John Gray
School of Forest Resources
and Conservation
University of Florida
Gainesville, FL 32601

99. John Gustafson
R.D. #1
Homer, NY 13077

100. Albert Hall
Catskill Study Commission
Stamford, NY 12167

101. Robert Hall
The Conservationist
Albany, NY 12201

102. Austin F. Hamer
SUNY CESF
Syracuse, NY 13210

103. Mary Hamilton
Route 3
Greenfield, OH 45123

104. Kirk Handov
612 Parsons Drive
Syracuse, NY 13219

105. David L. Hanselman
SUNY CESF
Syracuse, NY 13210

106. William G. Hansen
2033 Norfolk
Ann Arbor, MI 48103

107. Josephine Harris
P.O. Box 81
Middlefield, OH 44062

108. Daisey Harvey
1121 Dauphine Lane
Manchester, MO 63011

109. Gary D. Harvey
1121 Dauphine Lane
Manchester, MO 63011

110. Anne Heisler
Mt. Hood National Forest
2440 S. E. 190th Street
Portland, OR 97233

111. Randall O. Herberg
B-1 Box 1599
Glencoe, MO 63038

112. Martin Hetherington
Center for Environmental Quality
238 Administration Building
Michigan State University
East Lansing, MI 48824

113. John G. Hewston
333 Fickle Hill Road
Arcata, CA 95521

114. Clyde W. Hibbs
Department of Natural Resources
Ball State University
Muncie, IN 47306

115. Gregory A. Hill
Pine Lake Campus
Box 461 R.D. #3
Oneonta, NY 13820

116. Deborah Hodock
48 Miles Avenue
Fairport, NY 14450

117. Marnie Hogeland
1621 Connecticut Avenue
Washington, DC 20009

118. Bernie T. Holman
SUNY CESF
Syracuse, NY 13210

119. Barbara M. Horn
Department of Natural Resources
7th Floor, Mason Building
Lansing, MI 48926

120. Robert D. Hostetter
P.O. Box 2965
Portland, OR 97208

121. Joseph R. Hovance
Outdoor Education Center
247 Southern Blvd.
Chatham, NJ 07928

122. George Howlett, Jr.
CESA #9
1927 Main Street
Green Bay, WI 54301

123. John Hug
R.D. #1 Box 97
Mill Run, PA 15464

124. L. E. Ismay
Altamont, NY 12009

125. Ross L. Iverson
940 Rimini Court
Missoula, MT 59801

126. Barry W. Jamason
NYS Department of Education
Albany, NY 12224

127. Melodee James
Brainard Road
R. D. #2
Averill Park, NY 12018

128. Wendell E. Jeffery
Rte. 2 Box 8A
Eldon, MO 65026

129. Neil W. Jenkins
Route 3, Box 64
Lee's Summit, MO 64063

130. Walter E. Jeske
3050 North Pollard Street
Arlington, VA 22207

131. Carl M. Johnson
Utah State University
Logan, UT 84322

132. J. Gibson Johnston
Georgia Department of
Natural Resources
Atlanta, GA 30334

133. Allyn Jones
4946 Camillus Drive
Camillus, NY 13031

134. Philip N. Jorgensen
Cider Mill Road
Andover, CT 06232

135. Julius Kaltcheff
P.O. Box 62
Granite Springs, NY 10527

136. Rick Kalvelage
Department of
Natural Resources
Paynette, WI 53701

137. Steve Kapel
Cornell University
Ithaca, NY 14850

138. Gerry W. Kelly
Weyerhaeuser CH3-24
Tacoma, WA 98401

139. John W. Kelley
Department of
Natural Resources
Fernow Hall
Cornell University
Ithaca, NY 14850

140. George F. Kenner
6 Flower Hill Place
Port Washington, NY 11050

141. Ronald Killian
University Park H201
Ithaca, NY 14850

142. Connie Kozmarek (Bart)
Room ...10
90 Wolf Road
Albany, NY 12201

143. Mary Krause
Milwaukee Public Museum
Milwaukee, WI 53202

144. Lawrence J. Krauza
115 Fruehauf
Snyder, NY 14226

145. David Kriebel
Union of Young Environmentalists
University of Wisconsin-Green Bay
Green Bay, WI 54302

146. Stella Kroft
SUNY CESF
Syracuse, NY 13210

147. Katie Kumble
311 Stafford Avenue
Scranton, PA 18505

148. Donald R. Lambert
R.F.D. #2 Moulton Hill Road
Monson, MA 01057

149. Janet E. Leighow
Nolde Forest State Park
Box 392 R.D. #1
Reading, PA 19607

150. Thomas W. Levermann
3015 Menke Circle
Omaha, NB 68134

151. Richard L. Linguiditter
6117 Owens Drive
Boise, ID 83705

152. Edward Littlehales
9743 West 36th Avenue
Wheat Ridge, CO 80033

153. James C. Logan
Wesley Theological Seminary
4400 Massachusetts Avenue, NW
Washington, DC 20016

154. Lauren H. Long
9 Sunrise Terrace
Orono, ME 04473

155. David C. Ludington
College of Ag and Life Sciences
Cornell University
Ithaca, NY 14850

156. Fran Ludwig
14 Normandy Road
Lexington, MA 02173

157. Doris H. Lyng
807 E. Main Street
East Aurora, NY 14052

158. Leslie May
160 W. Northwood
Columbus, OH 43210

159. Paul S. Markovits
101 Heroy Geology Building
Syracuse University
Syracuse, NY 13210

160. Allen Marsters
SUNY CESF
Syracuse, NY 13210

161. Frank McCamey
220 Shawmont Avenue
Philadelphia, PA 19128

162. Thelma McClellan
Route 2
Plummer, ID 83851

163. [illegible]

164. Richard J. McNeil
College of Agriculture and Life Sciences
Cornell University
Ithaca, NY 14850

165. Shirley E. McNelley
1679 Peachtree Road NE A-401
Atlanta, GA 30309

166. Jane McSwain
American Forest Institute
1619 Massachusetts Avenue, NW
Washington, DC 20036

167. Paul R. Mehne
SUNY CESF
Syracuse, NY 13210

168. Ruth W. Mehrtens
8533 Winchester Road
Carroll, OH 43112

169. Katharine Morgan
1330 Massachusetts Ave. NW
Washington, DC 20005

170. John Morrison, Jr.
19 Crandfield Road
Fairport, NY 14450

171. Carol Mrozgalski
NYS DEC
1001 Elwood Davis Road
N. Syracuse, NY 13212

172. George Mueller
USFS NEFES
SUNY CESF
Syracuse, NY 13210

173. Elizabeth Mueller
222 Standing Drive
Syracuse, NY 13224

174. John E. Mudge
3 Fairmont Square
Farmington, ME 04938

175. Ray Muldawer
Environmental Protection Agency
Hyannis Mall
6th & Main Street SW
Washington, DC 20460

176. Victor E. Munson
59 Beachview Avenue
Bridgeport, CT 06605

177. Martha E. Munson
317 Munn Avenue
Monroeville, NY 14583

178. Richard J. Myshak
4800 Glenwood Avenue
Minneapolis, MN 55422

179. Vance H. Nesmith
S. C. Land Resources Commission
P. O. Box 11769
Columbia, SC 29211

180. John Novado
SUNY CESF
Syracuse, NY 13210

181. Barbara Nowicki
Schuylkill Valley
Nature Center
Hagy's Mill Road
Philadelphia, PA 19128

182. Virginia Nugent
League of Women Voters
1730 M Street NW
Washington, DC 20036

183. Maureen R. Oates
163 Russell Avenue
Watertown, MA 02172

184. Robert Oertel
Box 832
Athens, GA 30601

185. Elmer E. Offerman
P. O. Box 63
Storrs, CT 06268

186. Samuel Olum
208 Croly Street
Syracuse, NY 13219

187. Robin Ott
60 - 10 - 67 Avenue
Rhinebeck, NY 11377

188. Calvin W. Ormsby
16 Delaware Avenue
Cortland, NY 13045

189. Jane Orsel
1100 Meadowbrook Road
Williamsville, NY 14221

190. Gerry Owczarczak
SUNY CESF
Syracuse, NY 13210

191. Per Elmer Owen
137 Nottingham Court
Monmouth, NJ 07960

192. John J. Pafalino
Peconic Environmental
Education Center
Dingmans Ferry, PA 18328

193. Maria Pafundi
SUNY CESF
Syracuse, NY 13210

194. Grazia Pappa
180 Theodore Parker Road
West Roxbury, MA 02132

195. Joseph Passineau
Environmental Studies
Utah State University
Logan, UT 84322

196. Mary Pavlin
P.O. Box 339
Middlefield, OH 44062

197. John Pauli
Operations Office
TVA Land Between the Lakes
Golden Pond, KY 42231

198. Harrison Payne
SUNY CESF
Syracuse, NY 13210

199. E. F. Peller
USFS
1720 Peachtree Road NW
Atlanta, GA 30309

200. Richard Pennoyer
SUNY CESF
Syracuse, NY 13210

201. E. John Perry
Allied Chemical Corporation
Jamesville Quarry
Jamesville, NY 13078

202. Betty Phinney
4 Sullivan Lane
Lenox, MA 01240

203. Robert C. Pierpoint
Allied Chemical Corporation
P. O. Box 6
Solvay, NY 13209

204. Mark Plaut
State Urban Environmental Planning
106 Young Avenue
Yonkers, NY 10710

205. Barbara Pleczo
NYS Environmental News
P. O. Box 550 DEC SUNY A
1450 Washington Avenue
Albany, NY 12233

206. Curtis Powell
Conservation Education Center
Box 108C RR #1
Guthrie Center, IA 50115

207. Richard Presnell
University of Wisconsin-Green Bay
Green Bay, WI 54302

208. Carl Priebe
Conservation Center
Box 108C RR #1
Guthrie Center, IA 50115

209. R. E. Quinn
507 Kyle Road
College Station, TX 77840

210. Thomas Raggon
SUNY CESF
Syracuse, NY 13210

211. Mary Rapson
809 Thurber Street
Syracuse, NY 13210

212. William C. Ray
Environmental Studies Institute
Syracuse University
110 Clarendon Street
Syracuse, NY 13210

213. Augustin A. Rast
Syracuse University
Syracuse, NY 13210

214. Dave A. Readley
Science Division
Northeast Missouri State Univ.
Kirksville, MO 63501

215. Charles E. Roth
39 Mill Road
Littleton, MA 01460

216. [illegible]

217. [illegible]

218. [illegible]

219. [illegible]

220. [illegible]

221. [illegible]

222. [illegible]

223. [illegible]

224. [illegible]

225. [illegible]

226. [illegible]

227. [illegible]

228. [illegible]

229. [illegible]

230. [illegible]

231. [illegible]

232. [illegible]

233. George Snyder
SUNY CESF
Syracuse, NY 13210

234. [illegible]

235. [illegible]

236. [illegible]

237. [illegible]

238. [illegible]

239. [illegible]

240. [illegible]

241. [illegible]

242. [illegible]

243. [illegible]

244. [illegible]

245. [illegible]

246. [illegible]

247. [illegible]

248. [illegible]

249. [illegible]

250. Rebecca J. Tyrrell
195 Moonlawn Road
Troy, NY 12180

251. [illegible]

252. [illegible]

253. [illegible]

254. [illegible]

255. [illegible]

256. [illegible]

257. [illegible]

258. [illegible]

259. [illegible]

260. [illegible]

261. [illegible]

262. [illegible]

263. [illegible]

264. [illegible]

265. [illegible]